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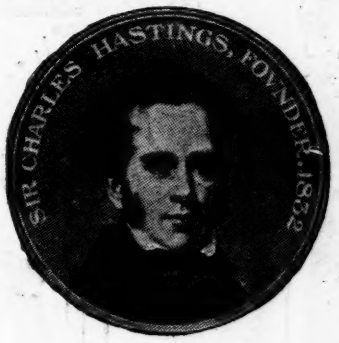

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A Post-Graduate Clinical Lecture

ON

SYMPTOMLESS HAEMATURIA.

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BY

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PROFESSOR OF CLINICAL SURGERY, UNIVERSITY OF MANCHESTER; HONORARY SURGEON TO THE MANCHESTER ROYAL INFIRMARY.

[*Abstract.*]

HAEMATURIA as a clinical manifestation is frequently met with, but—fortunately from the point of view of the diagnosis of its cause—is usually accompanied by other symptoms of urinary disorder: pain, frequency of micturition, pyuria, etc. Here I wish to draw attention to a very interesting group of cases in which haematuria is absolutely the only symptom of which the patient complains; apart from this the urinary functions are in every way normal.

The discovery that blood is present in the urine is more or less a matter of chance, the patient happening to notice the colour; many volunteer the statement that had they been blind they would never have known there was anything wrong. In some of these cases, however, if the bleeding is sufficiently profuse for blood clots to form, pain may be caused by their passage along the ureter or urethra; but such pain is a "side-issue," and, not being dependent upon the actual cause of the haematuria, does not remove the case from the class of "symptomless" haematurias. The great interest of these cases lies in the diagnosis of their cause, and this is a matter entirely of physical examination, absolutely unassisted by any description of subjective symptoms by the patient.

I have recently completed the clinical investigation of 100 cases of symptomless haematuria, with the following results:

A. *The haematuria was of vesical origin in 65 cases:*

1. Villous papilloma	41
2. Malignant growth	18
3. Enlargement of prostate	3
4. Ulceration from suture left after colporrhaphy	1
5. Simple "solitary" or "mucous" ulcer	1
6. Calculus fixed in post-prostatic pouch	1

B. *The haematuria was of renal origin in 35 cases:*

7. Bleeding not seen at the time of examination; cause unknown	14
8. Malignant growths (including hypernephroma)	9
9. Papilloma of the renal pelvis	2
10. Angeioma of a renal papilla	1
11. Renal calculus	3
12. Congenital cystic disease	1
13. Chronic nephritis, with small cysts	1
14. Mobile kidney	2
15. "Essential" haematuria	2

Fenwick and others have described cases in which a symptomless haematuria was the first, and for some time the only, manifestation of renal tuberculosis—just as sudden haemoptysis may precede for a long period any other evidence of pulmonary tuberculosis.

1 and 2.—The outstanding feature of a review of these figures is that, while almost every pathological lesion of the kidney and bladder may occasionally manifest itself as a symptomless haematuria, some form of new growth enormously preponderates. Excluding the 14 cases of renal origin which were not bleeding at the time of examination, and in which the kidney affected could not be determined, my series shows 71 new growths out of 86 cases—that is, 82.5 per cent. Of the 71 new growths, 44 were benign and 27 malignant; 12 were situated in the kidney (3 benign and 9 malignant) and 59 in the bladder (41 benign and 18 malignant). Taking all my cases of symptomless haematuria of known etiology, benign new growth was the cause in 51.1 per cent. and malignant new growth in 31.3 per cent. The diagnosis of simple from malignant growths of the bladder is not always possible by cystoscopic examination only, since both may have a villous surface; in the earlier cases of my series all the bladder growths were removed by suprapubic cystotomy and their nature determined by histological examination, but since 1913 the deciding factor in most cases has been the effect upon them of treatment by the diathermic current applied through a cystoscope; its immediately beneficial effect upon benign growths, and its failure to produce more than very temporary, if any, benefit upon malignant growths, form such a striking contrast as to constitute a useful practical clinical test between innocency and malignancy. In view of the great preponderance of new growths, it is only natural that in any given case of symptomless haematuria the surgeon's first thought will turn to that, and especially to villous papilloma, as the most probable cause; the fact that in about one-third of all cases (31.3 per cent.) a malignant growth is present, possibly in an early and operable stage, serves only to enhance the importance of tracing the haematuria to its source at the earliest opportunity.

Among the causes, other than new growths, in my series were the following:

3. *Enlarged Prostate.*—In three cases bleeding was seen cystoscopically to come from an intravesical enlargement of the prostate, although none of the usual early symptoms of prostatic enlargement were present. There has been no recurrence of haemorrhage since prostatectomy.

4. *Ulceration from Suture.*—Here the blood was seen to come from an ulcer on the posterior wall of the bladder just behind the trigone; in the base of the ulcer a foreign body was seen, which proved to be a chromic catgut suture remaining after an operation of colporrhaphy three years previously; after its removal the ulcer healed readily. There was not the slightest encrustation of urinary salts upon the suture.

5. *Simple "Solitary" Ulcer.*—This patient, a male aged 27, was in hospital for varicose veins, when he commenced with haematuria, which rapidly became so profuse that when I first saw him he was passing almost pure blood—in fact, it clotted in the vessel. Cystoscopy was impossible, so I opened the bladder suprapubically, and found an ulcer three-quarters of an inch in diameter, on the posterior wall, slightly to the left of the middle line and just behind the trigone, and which was bleeding profusely. The bleeding was stopped by the cautery, and never recurred. Some six years later this man again came under my observation, with tuberculosis of the left epididymis and vesicula seminalis; cystoscopy showed the bladder free from ulceration, though the scar of the former ulcer was plainly visible. Fenwick describes cases of simple "solitary" ulcer in which there has been no subsequent development of tuberculosis, but I think that, in my case, the original ulcer was probably of tuberculous origin, although no other evidence of tuberculosis in the body was then discovered. He died of generalized tuberculosis within a year of the second examination.

6. *Vesical Calculus.*—This was a male, aged 60, who had had two attacks of symptomless haematuria at an interval of two years. Cystoscopy showed an intravesical enlargement of the prostate with calculi in the post-prostatic pouch. These were removed, along with the prostate. There were one large and seven small calculi; the large one [shown at the lecture] was the most conspicuously stellate and "spiked" calculus I have met with, each primary "spike" ending in three or four secondary ones. That such a calculus should be unassociated with any pain or other symptoms except the two attacks of haematuria seems very remarkable, and is probably to be explained by its fixity in a post-prostatic pouch.

9, 10, 12, 13.—These conditions were discovered only after exploratory nephrotomy of the kidney to which the haemorrhage had been cystoscopically located, and the two former only after almost complete hemisection of the kidney, the renal pedicle having been previously clamped. In both cases of papilloma the growth was small, single, and situated in the lowest calyx, and was treated by local excision only, with subsequent suture of the kidney. The angeioma was situated on one of the renal papillae towards the upper pole, was about the size of a green pea, and was similarly treated. One of the cases of papilloma had recurrent haematuria four years later; cystoscopy showed the bleeding to come from the same kidney (right), the left kidney acting normally. Nephrotomy showed considerable recurrence of the papillomatous condition, and I removed the kidney, since when there has been no further haemorrhage. The case of angeioma and the second case of papilloma were free from recurrence five years later, but have been lost sight of since.

11. *Renal Calculus.*—One of my three cases was of particular interest, the cause of the haematuria not being recognized at the time. A female, middle-aged, was removed to a

fever hospital, with slight haematuria and slight desquamation of the skin, from a house in which some six weeks previously two cases of undoubted scarlet fever had occurred, she being considered to have a slight degree of post-scarlatinal nephritis. As the haematuria became rather bright red the possibility of villous papilloma of the bladder was considered, and I made a cystoscopic examination. I found a perfectly normal bladder and saw the blood coming from both ureteric orifices. The bleeding ceased entirely in a few days, and I heard nothing further of the case until seven years later, when, the haemorrhage recurring, she was admitted to my wards. Cystoscopy then showed the blood to be coming from the right ureteric orifice only. Radiography disclosed a large-branched calculus in each kidney, completely filling up the pelvis and calyces. Nephro-lithotomy was performed on the right side and three weeks later on the left, with complete arrest of the haemorrhage. This is the only occasion on which I have seen with the cystoscope blood issuing from both ureteric orifices simultaneously in a case of bilateral renal calculus, and such occasions must necessarily be exceedingly rare. A point to emphasize is that in bilateral renal calculus painless haematuria from one kidney may accompany typical renal colic, without haematuria, in the opposite kidney, and, unless a cystoscopic examination be made and the source of the bleeding definitely determined it might naturally be concluded that the bleeding was from the side of the renal colic. I have recently had such a case where the bleeding was so profuse as to threaten death from haemorrhage, and only a routine cystoscopy prevented the wrong—that is, the non-bleeding—kidney from being operated upon first.

14. *Mobile Kidney.*—In two cases, both males, the kidney to which the haemorrhage was traced was extremely mobile. Exploratory nephrotomy revealed no other abnormality, and nephropexy arrested the bleeding, which has not since recurred—twelve and eight years respectively having elapsed.

15. *"Essential" Haematuria.*—In two cases, the bleeding having been traced to one kidney, exploratory nephrotomy revealed no macroscopic cause, and a portion of renal parenchyma removed for histological examination showed a normal structure. The term "essential" haematuria has been applied to renal haemorrhage, the etiology of which cannot be determined after all the present known methods of urological investigation have been applied with negative result. The most recent writer on this subject, Dr. C. S. Levy,[1] of the Johns Hopkins Hospital, Baltimore, in reviewing thirty cases, evidently does not include exploratory nephrotomy in his methods of urological investigation, and thus instances of 9, 10, and 13 in my series would have been classed as "essential," although nephrotomy revealed a definite cause.

In clinically investigating a case of apparently symptomless haematuria we must first of all make sure, by microscopic detection of blood corpuscles, that it is really haematuria and not the rare condition of haemoglobinuria. Further, we must exclude general diseases that cause haematuria, such as haemophilia, scurvy-rickets, the group of anaemias, and the passive congestion of heart disease. Having decided that the haematuria results from some lesion in the urinary tract, we next require to investigate, in order of urgency, (1) the source of the haemorrhage, whether vesical or renal, and if the latter whether unilateral or bilateral; (2) the nature of the lesion causing it; and (3) the functional condition of the rest of the urinary tract. The physical characters of the blood—whether intimately mixed or not with the urine, whether bright red or dark red, whether associated with clots of any characteristic shape—although serving as a rough and ready guide to the source of the bleeding, are not sufficiently trustworthy to be relied upon in any given case. The brightest haematuria I have ever seen was proved cystoscopically to come from a kidney which subsequent operation showed to be the seat of a sarcoma; while in another case, where the blood was of a dark "porter" colour, intimately mixed with the urine, and associated with attacks of severe left renal colic, cystoscopy showed a large villous papilloma of the bladder almost occluding the left ureteric orifice. By cystoscopy alone can the source of the haemorrhage be determined with certainty, and its application should be regarded as a matter of urgency, particularly if the haemorrhage is actually going on. If the haematuria be of renal origin it is only at this time that the kidney at fault can be discovered; such opportunity, if missed, may not recur for a long period, during which, as we have seen, in about one-third of all cases a malignant growth will be steadily progressing, and the only chance of its extirpation be lost. Too often does it happen that the practitioner's first efforts are directed not to ascertaining the source of the bleeding, but to immediately arresting it by keeping the patient in bed and administering morphine and internal styptics; though this may allay the alarm which many patients feel when they discover that they are passing blood with the urine, yet in the long run it would be of greater service rather to attempt to continue the haemorrhage until arrangements can be made for a cystoscopic examination to trace it to its source. Only in this manner will disease be located in its earlier and operable stages, and the present appalling mortality of malignant growths of the urinary tract be materially lessened.

Cystoscopy while bleeding is actually occurring will, if the haemorrhage be of renal origin, definitely indicate from which ureteric orifice the blood is escaping; if of vesical origin and not too profuse to obscure vision altogether, not only will the source of the haemorrhage be located but the lesion causing it will be seen. Difficulty will arise only where the bleeding is very profuse, but even here repeatedly washing out the bladder, combined with the introduction of a solution of adrenaline, will usually enable a view to be obtained; where this is found impossible this fact alone is strong presumptive evidence of a vesical origin.

Cystoscopy after cessation of the haemorrhage may fail to show its source: should it have been of vesical origin, then some lesion in the bladder sufficient to cause haemorrhage will be noted, and the absence of such indicates a renal source, although it does not show which kidney is at fault. A definitely abnormal appearance of one ureteric orifice suggests, though it does not prove, that the corresponding kidney is the offender; sometimes help is obtained by an assistant lightly compressing each loin, when, if unilateral haemorrhage be started, it suggests the pathological kidney. If bleeding cannot easily be induced, and if no renal tumour or other physical sign be present, then there is nothing for it but to wait until the haematuria recurs and to cystoscope during the attack.

Where the blood has been seen to issue from one ureteric orifice, then a thorough investigation must be instituted by all the usual urological methods to ascertain the pathological lesion in the corresponding kidney: careful palpation of the loin, a chemical, microscopic, and bacteriological examination of the mixed urine and possibly also of the separated urines after ureter catheterization, radiography, and pyelography. By these positive evidence may be obtained of certain conditions, such as calculus, tumour, or tuberculosis; but if they yield negative evidence only, then the remaining procedure is an exploratory nephrotomy. Before undertaking this, inasmuch as it may disclose some pathological condition requiring nephrectomy, it is essential to investigate the functional capacity of the opposite kidney, and for this I rely most upon the "indigo-carmine" test, the efflux from each ureteric orifice being carefully watched through the cystoscope. Being assured of the efficiency of the opposite kidney, the bleeding kidney is then explored from the loin, the upper end of the ureter and the renal pelvis carefully examined from without, the renal pedicle clamped, and the renal parenchyma freely incised so as to expose the whole of the pelvis and calyces. If no macroscopic lesion be found, a slice of the parenchyma is removed for histological examination and the kidney carefully sutured by deep and superficial catgut sutures. The case must now be classed as an "essential" haematuria, and should the haemorrhage subsequently recur it may be treated medically, with the confidence that one has not overlooked a malignant growth; only if the haemorrhage becomes so profuse as to immediately threaten life should further operative treatment be considered, and this would take the form of nephrectomy.

In the paper already referred to, C. S. Levy traces the after-history of 30 cases of "essential" haematuria, at periods of from one month up to twelve years: 12 cases remained free from recurrence and 18 recurred. Of the 30 cases 5 only were operated upon: 1 by nephrectomy with cure, 3 by nephrotomy (1 without recurrence, 1 with recurrence five years later and twice since, and 1 with recurrence two and a half years later and five times since), and 1 by decapsulation, with recurrence after five years and thrice since; none of the patients developed tubercle, growth, or serious disease subsequently. Although one must admit that the results of operative treatment in true "essential" haematuria are not superior to those of medical or expectant treatment, yet personally I hesitate to class a case as "essential" until an

[1] *Surgery, Gynaecology, and Obstetrics*, January, 1922.

exploratory nephrotomy has proved negative—one has the uncomfortable feeling that an early case of malignant growth might be overlooked. The operation in itself is not a serious risk; it may disclose some curable condition which otherwise might have been missed until it had reached an advanced stage, and even should it prove negative it allows one to regard without alarm any future recurrence of the haematuria.

In conclusion let me again emphasize the great importance, when called to a case of symptomless haematuria, of treating the patient rather than the haemorrhage, and of not attempting to arrest the bleeding until, by means of cystoscopy, it has been traced to its source.

An Address
ON THE
PERNICIOUS VOMITING OF PREGNANCY.*

BY

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FOR more than twenty years I have been of the opinion that all cases of pernicious vomiting of pregnancy are neurotic in origin, and I have treated the condition accordingly. During this period I have met with about 35 cases, but for the purpose of this address I am considering only 29 of them, as the others remained at home for treatment. Of these 29 cases, 5 were in-patients under my care at the Leeds General Infirmary, 17 in the Hospital for Women and Children, Leeds, and the remaining 7 were in nursing homes. All the patients recovered, and in only one case was abortion induced. The advantage of the treatment that I carry out is that the vomiting usually ceases immediately, and induction of abortion is seldom or never necessary. Indeed, I do not know of any grave illness such as this is which responds to treatment so suddenly. By contrast the usual methods of treatment, multitudinous in variety and well known to you all, are prolonged and dissatisfying, and often end in the induction of abortion, which in this disease is attended by a serious risk to the life of the mother.

I will state exactly what I do; nothing could be more simple. The patient is admitted to a hospital or nursing home and put on ordinary diet at once. The nurses are told, if they have not nursed similar cases of mine before, that the vomiting is due to neurosis, that a bowl must not be provided even if the patient should vomit, and that the words "vomit" and "sickness" must not be mentioned in the presence of the patient. They must just expect her to take her food like other patients in the ward, and must not try to persuade her to do so. As a rule the patient will at once take the full ordinary diet and retain it, but sometimes only a small portion is taken for the first day or two, part of which may occasionally be vomited. If any vomiting occurs the patient is assured that it will soon stop and that she will soon be quite well. In most cases a rectal infusion of 4 per cent. glucose is given, and, as a rule, continuously by the drop method. This relieves the thirst and the feeling of exhaustion, and, by diminishing the acidosis, I think it lessens the tendency to vomit. No drugs are used, except a purgative when it seems desirable. There is no necessity for psycho-therapy as ordinarily carried out in medical and surgical cases. Hospital and other cases do much better when they are in a ward than in a separate room.

Simple though this treatment is in principle and in practice, difficulties sometimes occur, and some of these I must mention. It may seem strange to you, but the patients are sometimes reluctant to go to a hospital or nursing home. If induction of abortion, which the doctor often suggests, were advised, there would probably be no difficulty in persuading the patient to leave home; but when an operation is not necessary it is not always easy to convince her of the advantage of institutional treatment. In the severest cases, however, there is seldom any difficulty when the patient and her friends are assured that she will bear the journey satisfactorily.

In August, 1921, I saw a primigravida in consultation with her doctor in a town about thirty miles from Leeds. She was about eight weeks pregnant and had been vomiting for about three weeks. For two weeks she had been under treatment for pernicious vomiting and for several days had not retained any food. Vomiting and retching had been almost incessant for three or four days. Various medicines had been tried and glucose given by the rectum. The urine had given a strong reaction for acetone when tested a week previously. Her face was drawn, her eyes sunken; she was exhausted and distressed. The pulse was 120 a minute. Her doctor had arrived at the conclusion that nothing but induction of abortion would save her. Her friends were very reluctant for a while to allow her to be taken to Leeds, but after being told that the journey would not harm her, that the vomiting would cease when she arrived there, and that she would soon be better, they agreed to take her. She vomited once on arrival and had a meal of tea, bread-and-butter, and stewed apple as soon as she was settled in bed. She kept it, slept all night, and took coffee, bacon and egg, toast and marmalade for breakfast next morning. Ordinary diet was continued during the ten days she was in Leeds and the vomiting did not recur. When she went home the patient looked and felt quite well.

I will now narrate a case which illustrates the advisability of the patient being placed directly under the daily charge and observation of the obstetric surgeon who advises the treatment. With the exception of this all the cases were treated in Leeds, where I can obtain nurses who have entire faith in the treatment.

The patient was a primigravida, aged about 30, who had been ailing and had had albumin in her urine for four or five years. She was eight weeks pregnant. She had vomited severely for two weeks, and had been in a nursing home in a neighbouring town for about a week and fed with small quantities of Benger's and similar food. This was usually returned, and so were water and tea. She looked very ill, and I pressed her husband and her doctor to send her to Leeds. As they refused, a trial was given to ordinary diet, to the obvious amusement of her incredulous nurses, and glucose enemata were ordered. The vomiting persisted, and when I saw her again three days later she was no better. I noticed at once a capacious bowl still remaining at the bedside, which, in my opinion, was a contributory cause of the persistence of the vomiting. I again expressed my conviction that she would soon be well if she came to Leeds, and advised against induction of abortion, but she remained where she was, and was treated by glucose infusion given continuously and by semi-starvation diet. Sugar, diacetic acid, and albumin were present in the urine. Vomiting continued in varying degrees for some weeks, and eventually she recovered, but the sugar in the urine persisted until after the labour at full time, when she was safely delivered of a weakly child weighing 4 lb. It is my belief that if my advice had been accepted this patient would have recovered much sooner and the life and health of herself and child would have escaped the serious dangers through which they passed.

In three or four cases in which the vomiting has persisted after admission to hospital I have suspected that the patient wished to get rid of her pregnancy. One of them acknowledged, after spontaneous abortion at the sixth month of pregnancy, that she was "determined not to go through with it," and that she had produced the vomiting by putting her finger into her pharynx. In some other instances I have spoken seriously to the patient, and have pointed out the danger of the persistent vomiting and of induced abortion, and afterwards, with one exception, the symptoms have soon cleared up. In the exception, however, abortion was induced. She was sent to the Hospital for Women and Children, Leeds, by her doctor, who told me and the patient that induction was necessary to save her life. She improved after admission, but relapsed again after her friends had visited her and told her that their family doctor said she must have induction of abortion or she would die. She was alternately better and worse for two weeks, the bad turns always following visiting days, and in the end I gave up the struggle and evacuated the uterus.

I trust that I have explained clearly and fully enough the treatment carried out and the difficulties met with, but I would like to emphasize the necessity of having nurses who believe in the treatment. I am occasionally asked if my results are good in toxaemic cases. My reply is that most of my cases are toxaemic, but I regard the toxaemia as a result and not as a cause of the vomiting. Many have been seriously ill and emaciated and have had bile-stained conjunctivae and bile in their urine. Such cases recover as quickly as the less severe and their recovery is more dramatic.

Perhaps I ought to say a word or two about the pathology of this condition, although I am mainly concerned with its treatment. Tweedy[1] thinks that the pernicious vomiting of pregnancy is due to food poisoning; Hirst[2] that abnormal secretions of the corpus luteum cause it. These theories are highly speculative and have little evidence to support them. Most authorities appear to favour the view that some toxic substance is absorbed from the developing ovum. This seems a more reasonable hypothesis, because there is no condition, apart from pregnancy, like pernicious vomiting. One of my cases, however, seems to offer evidence against it, for the vomiting continued, although the ovum was almost

* Abridged from the valedictory presidential address at the North of England Obstetrical and Gynaecological Society, January 20th, 1922.

completely decomposed. Pathological investigations, which have been carried out extensively, have been mostly concerned with the character of the metabolic disturbance rather than with its primary cause. Some workers[3] have concluded that the chief disturbance is one of carbohydrate metabolism, others of nitrogenous metabolism. Amongst the latter is Whitridge Williams,[4] who, in 1905 and 1906, expressed the opinion that the ammonia coefficient is valuable in the diagnosis of the severity and the variety of the disease and also as a guide to treatment, more particularly with respect to the question of induction of abortion. In a later paper[5] he admits that he overvalued the significance of the ammonia coefficient. He also says: "In my experience neurotic vomiting is the variety most frequently encountered,"[6] and mentions a case in which the vomiting ceased at once when he decided to induce abortion. He believes, however, that in some cases a primary toxaemia is the cause of the vomiting, but to my mind his arguments in favour of this view are not convincing. Pathological investigations into the changes in the urine have not been made in my cases, chiefly because the work seemed unnecessary for purposes of treatment and prognosis, and also because the vomiting has usually ceased before the investigations could have been carried out.

My clinical experience leaves me in no doubt that all my cases are of neurotic origin, and I believe that all cases of pernicious vomiting of pregnancy are of this variety, and that the more severe cases are later or advanced stages of neurotic vomiting.

Conclusions.

1. Vomiting of pregnancy can be cured quickly as a rule and with a high degree of certainty by the removal of the patient to a hospital or nursing home and by feeding on ordinary diet.
2. Induction of abortion is seldom or never necessary.
3. The so-called toxaemic cases are usually, if not always, a later stage of neurotic vomiting.

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SOME COMMON DEFECTS OF DIET AND THEIR PATHOLOGICAL SIGNIFICANCE.

Abstract of the Oliver-Sharpey Lectures delivered before the Royal College of Physicians,

by

E. MELLANBY, M.D.

LECTURE I.

Professor Mellanby began by saying that up to a few years ago the subject of nutrition was completely dominated by German ideas and German work, more particularly the very great work of Ruebner, whose point of view, briefly, was that if a person ate enough to give rise to sufficient energy that was all that was necessary. Ruebner put forward the generalization known as the theory of isodynamic equivalents—that is to say, that most foodstuffs were equally good so long as they provided sufficient energy for a man's body. That, obviously, was to treat a man like an engine, and to some extent it was justifiable. Almost the only qualification in Ruebner's theory of isodynamic equivalents of foodstuffs was that the food must contain a small quantity—about 4 per cent.—of protein. This theory of Ruebner was completely demolished by F. G. Hopkins in his Huxley lecture,[1] in which the subject of nutrition and dietetics was treated from a more or less philosophical standpoint. Hopkins showed that Ruebner in stating that the energy given by food was its only limiting factor was quite wrong. The energy was the limiting factor in a diet only when that diet was complete—that is to say, when it was a perfect diet—but there could be all kinds of imperfection in diets, such as insufficient carbohydrates, ill-balanced protein, and so on. Hopkins put forward the theory known as the theory of the minimum, which simply meant that every food in order to produce perfect health must have at least a minimum amount of certain constituents.

Lesson from the Eskimo.

In his own two lectures Professor Mellanby intended to approach the subject, not from the philosophical point of view of Hopkins, but by way of practical demonstration of certain errors in modern diet and their pathological consequences. Take, in the first place, the primitive Eskimo. This man had perfect teeth, perfectly arranged in very hard, well-formed jaws. His limb bones also were very strong. His diet consisted of muscle tissue and fat. When he killed his animal to eat he saved the blood in order to get sodium chloride in that way. He regarded the glandular structures of the animals he ate as dainties; he ate bone marrow and also the softer parts of the bones, such as the epiphyseal ends and the ribs. But, on the other hand, the modern Alaskan, whose diet depended upon stored goods, such as canned products, both cereals and meats, had teeth which were poorly calcified, and he was just as susceptible to caries as the man in a more highly civilized community. The same thing was found if one took the African or the West Indian negro in his natural habitat, where his diet consisted of fruit and vegetables and fresh natural products, and compared him with the negro in American cities. In the one case he had beautiful teeth and hard bones; in the other he was apt to show bad teeth, rickets, and general physical deterioration. The Icelanders, again, up to the middle of the last century were free from caries; their diet had consisted of milk, mutton, fish and fowl, and eggs of wild fowl. Now they had a modern dietary, with cereals, sugar, and so on, and had got caries and other degenerative conditions.

One other fact might be pointed out, although, perhaps, it was a digression. The Eskimos, living in their natural habitat, before the introduction of modern diets, got no cancer, and the same was true of the Icelanders. It was only with the introduction of these modern diets that cancer was becoming common in Iceland, and was now found actually among the Eskimo. This was an interesting observation, because here they had two diseases which were really diseases of growth—namely, rickets and cancer—and in one case certainly there was a relation to diet, while in the other it was just possible that there might be a similar relation. He did not mean that cancerous growths might not be forthcoming with a perfect diet, but it might be that the malignancy was due to wrong diet. That, however, was purely supposition, and without experimental basis.

The Change in Modern Diet.

It was necessary to ask why modern dietary had changed. Largely it was because people were taking more and more to urban life; fewer were actual food producers. The food had to be brought into cities from considerable distances, and preference was given to those foods which could be easily transported and were not readily destroyed by bacteria. Economic conditions were such that recourse had to be generally made to foods which could be easily and abundantly produced at comparatively small cost. The cheapest foods compatible with life were cereals, pulses, foreign meat, and vegetable margarines. But it was not only those who could not afford richer diets who suffered; people who were able to have a certain choice suffered also. It must be agreed that taste was not a very reliable guide to a proper dietary. Some people had a strong belief in physiological aesthetics, which meant that if a person liked a thing it was good for him. The believer in physiological aesthetics would point to the fact that the average man preferred butter to margarine. But, on the other hand, it could also be pointed out that the average man preferred the fat of bacon and pig fat generally to the fat of beef or mutton, and there was no doubt at all that beef fat and mutton fat were very much better, while probably the best fat of all which the laboratory worker came across was cod-liver oil, which the average man disdained. It might also be argued that the average man liked cereals, and ate large amounts of bread and also of sugar, and the value of these things as foods seemed to justify his taste; but how many people as a matter of choice drank milk as a beverage? Those who drank milk did so more or less as a duty, yet it was difficult to think of a food which had greater value.

Altogether, with regard to taste and appetite, it must be said that something had gone wrong. Nature had overdone things. Nature had seen that there were some things which were essential to life, like carbohydrates in the diet, and had laid so much stress on those constituents as to appear to forget that there might be other things which were equally important. The habit of rather excessive meat-eating was another instance. Most people liked meat to an extent which was hardly justified by the part it played in nutrition. An instance of taste going wholly wrong was the desire of many

people for acid and highly flavoured foods. Another reason why modern dietetic conceptions were often wrong was because, until recently, there had not been a reasonable standard for health. A child was found, for example, not only to like cereals and sugars, but apparently to flourish on them, growing fat and contented and lethargic, and the tendency was to regard weight as the criterion of health. The trouble was that the state of under-nutrition was not commonly appreciated. Malnutrition was understood when the child wasted away or developed tuberculosis, but more ought to be known about the state of under-nutrition before any extreme manifestations made their appearance.

Experimental Work on Foods.

The lecturer went on to detail some experiments on animals in regard to the effect of carbohydrates on growth, and pointed out that more activity was got by increasing the fat in the diet than by increasing the carbohydrates. Foods could be divided into two large groups: the first consisted of products such as milk, butter, cream, cheese, eggs, and green vegetables, like cabbage and lettuce; the other was made up of cereals (wheat, rice, oatmeal, maize, and all the prepared products made up of such things), vegetable margarine, lard, meat (including pork), also sugar, jam, potatoes, and tea, coffee, and cocoa. Of the first group the average man really got very little. An authoritative estimate showed that the amount of milk consumed per diem (including milk products) was equal only to a quarter of a pint a head of the population. Cheese was rather popular, but green vegetables were not commonly favoured, and his experience in hospital was that it was difficult to get patients to eat them at all. The second group of foods he had just catalogued was wrong in several respects; it lacked sodium, chlorine, calcium, anti-scorbutic vitamin, and if the fat of beef and mutton were taken away—and most people did leave such fat on their plates—the diet was also lacking in fat-soluble vitamin. The foods which were rich in calcium and fat-soluble vitamin were egg-yolk, cow's milk, human milk, and green vegetables; foods poor in this respect were white bread, rice (polished), potatoes, margarine, sugar, jam, and lean meat. He mentioned that from 1912 to 1917 the cases of xerophthalmia in Copenhagen increased in number steadily and considerably, but as soon as the Danish Government in 1917 prevented the export of butter, thereby making it available for home consumption, so that there was a sufficient quantity for each person, the whole trouble entirely disappeared. Just as in nature this fat-soluble vitamin was associated with calcium, so in the body there was experimental evidence for believing that calcium and something at any rate closely resembling fat-soluble vitamin worked in harmony—that, in fact, the body could not retain calcium, however much of it there might be in the food, if it did not have at the same time some of this vitamin.

The lecturer next described a basal diet for certain experiments on the production of rickets in dogs. The diet consisted of separated milk, white bread, yeast, orange juice, lean meat, and sodium chloride. If for the fat such a thing as linseed oil were used, rickets was produced; if cod-liver oil were used, there was no rickets. He had not been able definitely to affirm that this antirachitic vitamin was actually the fat-soluble, but it almost certainly was. Fats might be divided from the point of view of antirachitic action as follows:

Good.	*Moderate.*	*Poor.*
Cod-liver oil.	Lard.	Linseed oil.
Beef suet.	Coconut oil.	Olive oil.
Butter.	Rape.	Palm-kernel oil
Egg-yolk.	Cottonseed oil.	Babassu oil.

The hardened fats—hardened to make them tasteless and used for adding to margarine and so forth—were also very poor from the point of view of rickets prevention. Among the useful fats from this point of view was yolk of egg, which contained something absent from the white.

Diets deficient in fat-soluble vitamin had been found—as the result of experiments by Mrs. Mellanby on dogs—to give rise to a poor growth of the jaws and alveolar process, irregular placing of the teeth, delayed eruption and slow eruption, thin and defective enamel, teeth light in weight for their size, poor development of the gingival margin, as well as, generally speaking, a diminished resistance to disease. Dogs fed on cod-liver oil had good teeth, those fed on butter were moderately good from the dental point of view, though in certain respects defective, while those fed on linseed oil showed very bad formation of teeth and the tooth substance as shown by a microscopical examination was defective. It had not been proved that this experimental production of badly formed teeth solved the problem of caries. Mrs. Mellanby had not produced caries in these animals, and the fact remained to be proved. One could only say that it was probable that animals or children with badly formed teeth would be more susceptible to caries. He showed microscopical slides to illustrate the remarkable changes of dentine according to the type of fat used.

REFERENCE.

1 BRITISH MEDICAL JOURNAL, December 4th, 1920, p. 862.

CALCIUM DEFICIENCIES: THEIR TREATMENT BY PARATHYROID.

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IN a previous paper evidence was brought forward to show that in the circulating blood of the normal individual the calcium is present in two forms, ionized and combined.[1] When coagulation of the blood occurs, the calcium in the exuded serum is found to be all in the ionized form, the normal amount present being about 10.5 mg. of calcium per cent. In certain ulcerative conditions[2] it was found that there occurred a deviation from the normal in the calcium content of the serum, some of the calcium being present in the combined form. In all cases of varicose ulcer when the blood was examined this abnormality was found, and in the belief that this might be concerned in maintaining the chronicity of the ulceration measures were taken to increase the ionic fraction of the calcium in the serum. The intramuscular injection of ionized calcium salts had a definite effect in promoting the commencement of healing in the ulcers; the oral administration of calcium had none. But the injections did not appear to have the power to cause complete healing, and it was not till parathyroid substance was given orally that complete healing was obtained. Further, it was observed that healing of the ulcer and rise in the ionic calcium content of the serum ran approximately parallel. From these observations it was concluded that the toxic substance produced by the varicose condition in some way injured the parathyroid glands, and also combined with some of the ionized calcium of the blood. In this way the calcium balance of the blood became disturbed, and the parathyroids were not able to rectify it. Finally, the decrease in the plasma of one of its normal constituents would tend to lower the resistance of the tissues, so that the ulceration, started by slight local trauma, would tend to occur within the varicose area, where nutrition of the tissues is least effective.

The present paper forms an account of the application of these views to a considerably wider field of disease. The conditions dealt with may be classed generally as chronic states of a toxic or infective origin, and, though they have this common factor, they are classified in medical thought and literature as separate and usually unconnected diseases. It is therefore necessary to lay some stress on the mode of action of parathyroid substance, so that the appearance of a claim to its action as a universal panacea may be avoided.

The mode of action of parathyroid is essentially physiological; it is most probably a double action—a more or less specific action on calcium metabolism combined with, or resulting in, a generalized stimulation of metabolism as a whole. It is an aid in the fight against infection of the chronic type, not by its specific action on the infecting organism, but because it places the tissue cells under the most favourable conditions for an adequate resistance; and among the factors concerned in this process not the least important is the maintenance of a proper calcium balance in the plasma. If the tissue resistance is adequate it is immaterial whether the agent that is actively harmful is of bacterial origin or otherwise. If a deficiency of ionic calcium in the serum is a factor in the decrease of tissue resistance, then parathyroid therapy should be of value in those cases where such deficiency exists; and it is explicitly stated that parathyroid is not a specific method of cure for such conditions, but rather a rational method of assisting the cellular

elements to exercise their proper defensive mechanisms. If, then, it is realized that the majority of chronic diseases in medicine are due to protracted absorption of toxic substances from a septic focus, that such absorption is accompanied by a decrease in the ionic calcium of the blood, and that the parathyroid glands are the regulators of calcium metabolism, the claims which are put forward in the following paragraphs for the value of parathyroid therapy in such states will not seem so unreasonable as they may at first appear.

Over one hundred cases of chronic states have been treated by parathyroid therapy, in all of which variations in serum calcium have been observed during treatment. In all cases the sequence of events is similar: improvement commences when the amount of ionic calcium in the serum begins to approach the normal figure. In addition a considerable number of cases in which the calcium examinations were not made have been treated. The following table may give some indication of the types of disease amenable to this method of treatment, though it is fully realized that it may be applied successfully to many other conditions outside this particular series:

Table of Diseases Amenable to Treatment by Parathyroid.

I. *Chronic Toxaemias.*
- (*a*) *Ulcerative.*—Varicose ulcer; gastric ulcer; duodenal ulcer; erosion of cervix uteri; gumma.
- (*b*) *Suppurative.*—Nasal sinusitis; tonsillitis; pyorrhoea; otitis media; bacilluria.
- (*c*) *Non-suppurative.* — Rheumatic group: Rheumatoid arthritis; osteo-arthritis; chronic rheumatism. Arterio-sclerosis. Eczema; chlorosis; sciatica.

II. *Conditions of Uncertain Cause.*
Menorrhagia; prostatic hypertrophy; urticaria.

While these cases represent conditions where toxic processes have been at work over varying periods, the following observations afford some evidence of the manner in which an acute attack may affect the calcium of the serum. The symptoms ran a natural course without special treatment against the calcium deficiency.

I. On November 26th the patient's temperature was 102°. On the 27th lymphangitis of the leg became apparent; the temperature remained high, but fell to normal on November 29th. On this day the calcium content of the serum was as follows: Combined calcium 1.4 mg. per cent., ionic calcium 8.5—total, 9.9 mg. per cent. On December 2nd the combined calcium was 0.8, ionic 9.6—total, 10.4 mg. per cent. On December 8th all the calcium was ionized (10.4 mg. per cent.). It was not till the next day, however, that the patient felt any pleasure in work.

II. A mild influenzal attack. The patient had sore throat at midday on January 5th; rigor in the evening. Temperature 101°, pulse 80, respirations 18. Calcium content of serum: Combined calcium 1.8, ionic calcium 8.3—total, 10.1 mg. per cent. On January 6th the temperature was 100°. Serum calcium: Combined 1.5, ionic 8.3—total 9.8 mg. per cent. The following day the temperature was normal; combined calcium 1.0, ionic 9.1—total, 10.1 mg. per cent. On January 8th the serum calcium was normal (10.1 mg. per cent.).

The next two instances give the results of vaccine injections in the same individual. The vaccine used was the polyvalent vaccine for prophylaxis against influenza.

III. On January 18th, before injection, the serum calcium was normal (10.7 mg. per cent.); 1 c.cm. vaccine injected. Twelve hours after injection: Combined calcium 2.8, ionic 7.1—total, 9.9 mg. per cent. Thirty-six hours after injection the calcium content was as follows: Combined calcium 1.9, ionic 8.8—total, 10.7 mg. per cent.

Three weeks later a second injection was given and a similar result obtained. Before injection the serum calcium was normal (10.7 mg. per cent.). Twelve hours after injection the calcium content of the serum was: Combined calcium 2.8, ionic calcium 7.9—total, 10.7 mg. per cent. Twenty-four hours after injection: Combined calcium 2.1, ionic 8.6—total, 10.7 mg. per cent. Thirty-six hours after injection the serum calcium was normal.

In both instances the height of the local reaction was about twenty-four hours after injection, but in the second instance this reaction was less and the calcium returned more quickly to normal. Though acute conditions have not yet been studied to any great extent, there seems to be some evidence of an early disturbance of calcium metabolism.

Administration of Parathyroid Substance.

In order to standardize results to some extent, the same preparation of parathyroid (Parke, Davis and Co.) has been used throughout. Usually one-tenth of a grain has been given night and morning for the first four to seven days, and subsequently one-tenth of a grain daily. Such treatment may be continued for a considerable time; in no case has there been any symptom of overdosage. In the early stages of treatment certain conditions may arise which may be alarming. The most usual is an exacerbation of the septic process responsible for the general condition; a purulent discharge may increase in amount or may appear where it was absent before; a chronic appendix may become acute and necessitate operation; very frequently a tooth may start to ache. In three cases it happened that while some other complaint was being treated with parathyroid the patient had an attack of erythema—almost erysipelas of the face—and in all three cases there was marked sepsis of the teeth. A case of this type may be quoted.

A long-standing case with a small tuberculous sinus from the hip was found to have a marked deficiency in ionic calcium. After a week's parathyroid treatment (gr. 1/10 daily) the discharge increased until there was a quite severe local condition and the old healed tracks opened again. It took two months' parathyroid treatment to get the blood normal again, and then healing recommenced. At the present time, four months from the commencement of treatment, the sinus is about the same size as at the beginning, but there is evidence that the healing is progressive and not stationary as it was previously.

The increase of suppuration at the site of the septic focus suggests strongly that the parathyroid given by the mouth is producing a stimulation of the natural defensive mechanisms of the body; that it is, in fact, acting in a physiological manner and not specifically on the invading organism. If such is indeed the case, then its use in all forms of chronic infection can be readily understood.

The groups of cases set out in the table may now be considered and cases quoted from them as typical instances of the effects of parathyroid treatment.

Ulcerative Conditions.

Varicose Ulcers.—All the cases of this condition mentioned in the previous paper have remained healed, and a good many more have been treated with success. In two recent cases the ulcers were less than a quarter of an inch in diameter, very painful, and very resistant to parathyroid treatment. In both cases a septic condition of the gums was found, and after this had been remedied the ulcers healed. A further examination of the cases of varicose ulcer described in the previous paper revealed the presence of a pre-existing septic focus. In phlebitis of varicose veins calcium deficiency has also been found, and the more acute symptoms have subsided rapidly under parathyroid treatment. Here again the removal of septic foci in the teeth has hastened the disappearance of symptoms.

Gastric and Duodenal Ulcer.—Twelve cases of this diagnosis have been examined for calcium deficiency, and in all deficiency was present. It is not easy, however, to found a diagnosis or prognosis on purely clinical evidence or on the results of parathyroid treatment without some confirmation from *x*-ray examination or from some other evidence. Several cases have ultimately proved to be carcinoma in some form, although the early symptoms or results of treatment seemed to point to a simple ulceration. In such cases, although the patient may appear to be much improved physically, abdominal tenderness does not disappear completely. In cases which are not malignant the abdominal tenderness usually vanishes completely, the pallor is lost, the appetite increases, and the patient appears to take a much greater interest in his work and general life. Many of the cases in which there is calcium deficiency are very depressed, but the depression is lost as the calcium deficiency is removed; it is possible that many cases of neurasthenia are in reality due to toxic absorption and deficiency of ionic calcium. The two following cases may be quoted:

J. W., aged 56, had severe haematemesis six years ago. Last year he had a similar attack. He had always been very careful about his diet, but had pain regularly about two hours after meals. When he came under observation there was tenderness over the right rectus about two inches from the costal margin. On October 29th his serum calcium content was as follows: Combined calcium 0.5, ionic 7.29—total, 7.79 mg. per cent. He was given parathyroid gr. 1/10 daily, and on November 15th his serum calcium was normal. On December 5th he had no pain or tenderness; he states that for years he had never been able to eat so well.

Miss K., aged 50. For many years she had had pain two hours after food and at night. She had been seen by many doctors and her condition had always been diagnosed as duodenal ulcer. But so far as she knows she had not had either haematemesis or melaena. On October 28th the serum calcium content showed: Combined calcium 2.6, ionic 7.45—total, 10.05 mg. per cent. She was put on parathyroid daily, and on November 2nd the serum calcium was normal. By December 6th the patient was taking parathyroid gr. 1/10 twice a week, and was eating food without caution as she had not done for years.

On December 29th she said that she had been quite well till Christmas Day, when she ate a mince-pie; the pain returned that night and was still continuing. Tenderness was obvious in the same place as before. Serum calcium: Combined 1.2, ionic 8.5—total, 9.7 mg. per cent. She was put back to parathyroid daily.

On January 12th she had had no pain for three days, but there was still tenderness. A wisdom tooth was suspected of sepsis, and she admitted tenderness there. Serum calcium: Combined 1.2, ionic 7.3—total, 8.5 mg. per cent.

She did not have the tooth removed till February 6th, and there was an abscess at its root. At the time of writing she continues well, without any precautions as to diet, without pain, and the tenderness seems to have disappeared. She now refuses to give up taking parathyroid since she puts down her relapse at Christmas to the dose having been diminished too soon.

Gumma.—Although only one case of gumma has been treated in this way it is of sufficient interest to warrant its special mention.

Miss E., a chronic epileptic, aged 41, had a gumma of the left cheek which had been very resistant to specific treatment for eighteen months. On November 9th she had begun her third series of neo-salvarsan injections, which had been alternated with mercurial injections and mercury and iodide by the mouth. The gumma was about the size of a florin. Serum calcium: Combined calcium 1.7, ionic 7.9—total, 9.6 mg. per cent. The patient was given parathyroid gr. 1/10 night and morning, and the injections stopped. On November 16th the serum calcium was normal; ulcer healing well. Parathyroid reduced to gr. 1/10 daily. On November 21st the ulcer was completely healed, and the patient stated that she felt better than she had done for months.

The parathyroid was gradually dropped to once a week after a month's treatment, and the ulcer remains healed, although she has had no further specific treatment. It is of considerable interest to notice that during parathyroid treatment the epileptic fits decreased to about one in three weeks from two or three daily at a few days' interval. This is in accordance with the results obtained by other investigators.

Suppurative Conditions.

Nasal Infections.—In these conditions there is a focus of toxic absorption situated in the accessory air sinuses of the nose—an infection which is difficult to treat, and which may also be combined with a greater or less degree of ulceration in the affected area. Deficiency of ionic calcium has usually been found in such cases, and the treatment by parathyroid has given encouraging results, as is shown in the following two cases:

Mrs. S., aged 41, had a foul nasal discharge for years, and for some months it had been getting worse, so that she could not breathe through either nostril, and used some ten or twelve handkerchiefs a day. She had been told that it was due to ethmoid disease, and had been promised alleviation by operation, but had had to wait for a bed in hospital. On October 29th the calcium content of the serum showed: Combined calcium 2.3, ionic 6.1—total; 8.4 mg. per cent. She was given parathyroid gr. 1/10 daily. By November 11th she was breathing easily through the nose, used fewer handkerchiefs, and the discharge was whiter and less foul. Serum calcium: Combined 2.2, ionic 7.4—total, 9.6 mg. per cent.

On December 24th she had had practically no discharge for ten days; there was but a little thickness in the throat in the morning; the mouth was shut during sleep, and the patient was generally better than she had been for the last two years. Serum calcium: Combined 0.1, ionic 10.0 mg. per cent.—that is, practically normal.

March 2nd: Patient stated that for years she had not been so comfortable. In January she thought she was quite well and dropped parathyroid, but slight symptoms returned, and she is now taking it daily, and keeping apparently well.

Miss R., aged 62, all her life had had nasal trouble, and as a gir had to use douches; she had always refused operation. Twelve months ago she had a troublesome iritis; six months ago a prolonged and difficult conjunctivitis with dacryocystitis, all traced to nasal infection. On November 12th the conjunctivitis returned. Serum calcium: Combined 0.8, ionic 8.0—total, 8.8 mg. per cent. Parathyroid given. By November 24th the eye was well, the nasal discharge less, and the patient was feeling better than she had done for weeks. Serum calcium: Combined 0.9, ionic 9.5—total, 10.4 mg. per cent. (almost normal).

January 16th: Has had no relapse, though there is still some discharge. Serum calcium: Combined 0.7, ionic 9.4—total 10.1 mg. per cent.

She continues well at the time of writing, and is satisfied that the discharge is steadily improving and that she can do her work better than previously.

In both cases the only form of treatment used has been the oral administration of parathyroid; both of them show that a long time may elapse before the serum calcium returns to normal, although signs of improvement commence when the ionic calcium starts to increase.

One case of nasal infection has not been so successful; he had been operated on, but the result was not satisfactory, and he had been treated with vaccines. In October calcium deficiency was observed and parathyroid was given in addition to the vaccine. After three months there had been no improvement, possibly owing to the previously mentioned action of vaccine injections on the ionic calcium of the blood. For the last month he has had parathyroid alone, and some improvement has occurred, though the outcome is still uncertain. One or two single cases of septic states deserve mention.

Chronic Tonsillitis.—The patient had chronically enlarged and septic tonsils, but refused to have them removed. A year ago he was operated on for appendicitis. Since then he has had an attack of quinsy in both tonsils. On November 7th the serum calcium was: Combined 2.2, ionic 7.7—total, 9.9 mg. per cent. Parathyroid gr. 1/10 given daily. On November 25th the serum calcium was normal. He felt markedly better than he had done for some time, and the tonsils were smaller. He continues in perfect health.

Herpes Zoster and Iritis.—Mr. B., aged 69, on September 9th, while away from home, had an attack of herpes zoster on the left side of the head, involving the eye. The eye caused some anxiety and he was sent to the London Hospital, where he remained six weeks. On January 13th, when he returned home, there was ulceration of the cornea and iritis. Light only could be distinguished with the eye, which was much inflamed. Serum calcium: Combined calcium 2.0, ionic 7.3—total, 9.3 mg. per cent. Parathyroid given.

On January 22nd the ulceration seemed to be healed, but the cornea was steamy and there was much chemosis; he could distinguish objects, and the sight was improving. Serum calcium: Combined 0.6, ionic 8.6—total 9.2 mg. per cent.

He went on improving for a few days more, and then for a fortnight remained at a standstill. He may have been absorbing toxins from the gut, as after a brisk purge improvement recommenced. By the end of February the chemosis had practically disappeared, and there was but a slight ground-glass appearance to his vision. He could read medium large print with the affected eye, and said that it was improving daily.

In another case there was traumatic cataract, iritis, and later a small hypopyon due to piercing the cornea with a thorn. After a month's treatment with parathyroid combined with the removal of some septic teeth the lesion healed. In a case of chronic otitis media parathyroid treatment was followed by a temporary exacerbation of the discharge, but at the time of writing the aural discharge has practically ceased. Two cases of bacilluria (probably *B. coli*) were treated in the same way. Both were of some years' standing, and suffered during the attacks from extreme depression or neurasthenia; in both the ionic calcium was deficient. One was obviously suffering from septic teeth, and in the other, while under parathyroid treatment, one tooth became painful and another became so loose that it could almost be pulled out. The former case had been treated by an autogenous vaccine but had always relapsed, and under parathyroid he is better than he has been before. In both the depression had ceased, and improvement is encouraging.

Non-suppurative Conditions.

Rheumatic Group.—Some twenty cases of rheumatic conditions have been examined and treated, and on the whole with very satisfactory results. In these cases again deficiency of ionic calcium was found and the same sequence of events occurred—namely, that improvement commenced when the ionic calcium began to return to normal. Cases may be quoted as typical of some of the results obtained.

Rheumatoid Arthritis.—Mrs. B., aged 45, for years had suffered from Graves's disease and was still not free from general symptoms. For over a year she had had osteo-arthritis and for some months had only been able to leave the house in a bath-chair. Many joints were affected, but especially the wrists, fingers, and knees. For some time there had been a septic focus in the nasal sinuses, from which there had been a discharge into the throat. A vaccine from this focus had kept her from becoming bedridden, but for weeks she had hardly been able to leave a chair. On October 22nd the serum calcium was: Combined calcium 1.6, ionic 7.4—total, 9.0 mg. per cent. Parathyroid treatment commenced. In one week the calcium of the serum had become normal. By November 12th the nasal discharge had greatly lessened, she had been out of doors, and with the aid of a stick had walked a mile; the joints were smaller and without pain, except for some stiffness in the morning. She has gone on consistently well; at the end of January the parathyroid was decreased to gr. 1/10 twice a week, but both pain and discharge returned. On resuming parathyroid daily these symptoms have abated, so that she can get about comfortably and do her housework.

One case was entirely unsuccessful. It was that of a lady of 77 with a rheumatic history of two years' duration. Three years ago she had had a bad attack of cholecystitis, but had refused operation. Her present condition is almost wholly limited to the right hip. She had had injections of a *B. coli* vaccine without benefit. Calcium deficiency was present, and parathyroid treatment was tried. After six weeks the serum calcium became normal in amount, but the only improvement in the patient was that she slept better.

One case of true osteo-arthritis was treated, but naturally no improvement was expected to occur in the joints affected.

The case was that of a lady aged 61 with a history of several years' duration; she was absolutely bedridden, and the joints affected were ankylosed with considerable distortion. As her blood became normal the pain decreased, she slept better, and felt generally better than she had done since the commencement of her illness.

Sciatica.—Brief mention may be made of two cases of this complaint, as relief of pain seems to be a characteristic of the effect of parathyroid treatment. Mention of it will be made later in connexion with certain cases of inoperable carcinoma. In these two cases the serum calcium was deficient: (1) Combined calcium 1.2, ionic 9.5—total, 10.7; and (2) combined calcium 1.4, ionic 7.7—total, 9.1 mg. per cent. Sepsis of the teeth was present in each case, and both had been in bed for some time under other treatment; but after a short course of parathyroid treatment they were able to get up.

Acute Rheumatism.—So far parathyroid treatment has not been used much in this condition, but the variation of ionic calcium in the serum has been watched. Generally speaking, it can be said that as the patient improves the serum calcium returns to normal; if a relapse occurs, then the calcium becomes more deficient. In a case of this kind, which was being treated with salicylate, the serum calcium values were:

Nov. 12.	Combined calcium	2.2,	ionic	7.4—total		9.6 mg. %	
Nov. 17.	,,	,,	1.5	,,	8.5	,,	10.0 ,,
Nov. 22.	,,	,,	0.9	,,	9.6	,,	10.5 ,,
Dec. 14.	,,	,,	1.6	,,	8.6	,,	10.2 ,,

The relapse occurred clinically between the last two dates. In this case the patient was put on parathyroid later, but did not lose all pain in the affected joint till four septic teeth had been removed. In another case parathyroid was given on the first sign of a bruit developing, and although a month elapsed before the serum calcium reached normal, the bruit disappeared, and the patient remains in good health.

Arterio-sclerosis and Raised Blood Pressure.—A small number of cases of this type have been investigated, and encouraging results have been obtained by parathyroid treatment. Deficiency of the ionic calcium of the serum has been generally found.

A clergyman, aged 69, had influenza a year ago accompanied by a foul nasal discharge. Following this he had cardiac dilatation and breathlessness, and in the summer definite anginal attacks developed, which culminated in two bad attacks while he was away for a holiday. He has also had very marked pyorrhoea. He has taken parathyroid since November 11th, and the anginal attacks have never appeared again, though his breathlessness remains unchanged. He finds, however, that his capacity for brain work has improved, so that he can work with more ease than he has done for the last six years.

A lady, aged 50, had a blood pressure of 185 mm. systolic and 125 mm. diastolic, for which obvious cause could not be found. Her serum calcium was deficient, and dental sepsis was suspected. Under parathyroid treatment her gums became definitely sore, but she refused to have any teeth removed. The serum calcium became normal and the pressure fell to 155 mm. systolic and 110 mm. diastolic.

A case of tachycardia in chronic Graves's disease may also be referred to:

Mrs. W., aged 48, has had Graves's disease for many years; tremor is still present, though proptosis and thyroid enlargement are now hardly marked. The pulse is normally 80 to 90, and rather easily upset. Occasionally very frightening attacks of tachycardia occur with a feeling of impending death, though no cause can be ascribed to their occurrence. She had pyorrhoea in four teeth and a deficiency in the ionic calcium of the serum. Three weeks after commencing parathyroid treatment the calcium deficiency was improved, her pulse was much more steady, and in spite of an attack of influenza she has not had an attack of tachycardia for three months, and considers that for years she has not been so well.

Conditions of Uncertain Cause.

In concluding this account of conditions benefited by parathyroid treatment, menorrhagia and prostatic hypertrophy must be mentioned. The former condition is often, but not always, amenable to parathyroid therapy; some six cases have been treated with success.

Prostatic Hypertrophy.—A clergyman, aged 62, in July had acute retention. He had suffered from frequency for some years, so that he had been unable to conduct his services without interruption. His urine was clear on withdrawal until the evening of the second day, when there was some blood present, which increased with each catheterization. He was therefore given a grain of calcium chloride intramuscularly, and within twenty-four hours the sensation of the prostate at the point of the catheter passed had changed from softness to firmness. This suggested a possible calcium deficiency, but at the time it was not possible to examine the blood; he was, however, given parathyroid. The catheter was used for ten days, and after that he steadily improved, so that for some months he has had no undue frequency, his services are not interrupted, and he seldom gets up more than once in the night. His teeth are very septic, and twice since July he has had an attack of facial erythema, spreading like a subacute erysipelas. In these attacks the ionic calcium of the serum was found to be deficient. He has continued to take parathyroid once or twice a week, and as regards the prostate symptoms keeps well.

More than a dozen cases have been treated with complete success; two long-standing cases which are possibly carcinomatous have only been partly successful. The following are two interesting cases:

J. C., aged 81, was first catheterized on August 8th with much haemorrhage. He went into hospital and refused operation. He never regained power, and was sent out with a catheter, never passing anything without it. On October 6th the calcium content of the serum showed: Combined calcium 2.4, ionic 6.6—total, 9.0 mg. per cent. Parathyroid treatment was commenced. On October 18th the serum calcium was normal. One or two days immediately previous to this date he had passed a little urine spontaneously. On November 5th he was passing more and more urine with slight pain; the catheter was being used twice a day. He thought he passed about a pint daily without the catheter. He improved steadily, and on December 15th gave up the catheter for good. He has lost the sallow look he had previously, and has regained a healthy colour. He is disturbed once or twice only in the night, and says he is better than he has been for years. He continues to take parathyroid once or twice a week. Three bad teeth remain.

T. G., aged 68, had retention on September 11th and required catheterization for three days. Serum calcium: Combined calcium 2.5, ionic 6.4—total, 8.9 mg. per cent. Given parathyroid gr. 1/10 daily. On September 30th the serum calcium content was: Combined calcium 2.7, ionic 7.3—total, 10.0 mg. per cent. On October 13th he passed urine more easily than for years; frequency usually not more than twice in the night. Serum calcium about the same. By November 3rd the serum calcium was normal. He was looking well and was satisfied with his progress. Later he complained of some fullness and indigestion after meals. His remaining four teeth were removed and the indigestion disappeared. He keeps well and is sometimes not disturbed at night at all.

Finally, a word may be said about carcinoma and the effect of parathyroid treatment. A certain number of inoperable cases of this condition were treated; deficiency of the ionized calcium of the serum was found in almost all cases. But although the administration of parathyroid produced a relatively rapid return of the serum calcium to normal, it did not have any apparent inhibitive action on the malignant growth. In a case of carcinoma of the stomach there was less vomiting, and also a marked diminution of pain, so that it was possible to reduce very considerably the amount of morphine given. In another case there was an increase in weight for two or three weeks, combined with an abatement of symptoms and a feeling of perfect health.

SUMMARY.

Though the cases described are representative of a variety of conditions, it will be noted that they have two common factors: all are due to some chronic toxic state, and all have a deficiency in the ionic calcium of the serum, due perhaps to a combination of calcium and toxin. In the majority of cases it was possible to find a primary septic focus, and sometimes the administration of parathyroid caused a hidden focus to become apparent by increasing the leucocytic reaction to the attacking organism. An examination of the literature tends to establish the proposition that the parathyroid glands have a double function: First, a regulation of calcium metabolism, and secondly, the power to render certain toxic substances harmless. Further, it may be noted that in animals where the parathyroid function has been interfered with, either by removal or ligation of the glands, if tetany does not supervene shortly and so cause death, there is a very strong tendency for the animals to die from an infective process.

It is possible that a somewhat similar sequence of events may arise in the cases described. The continued absorption of toxic substances from some primary septic focus may eventually lead to partial parathyroid insufficiency and a disturbance of calcium metabolism. These two conditions will cause a decrease in the resistance of the tissues, so that they are rendered more liable to a secondary septic process. The locality of the latter lesion will depend on local conditions of nutrition, blood supply, and so forth.

From the clinical observations described, it may be permissible to draw certain conclusions.

1. The ionic calcium of the blood becomes deficient in cases where a chronic toxaemia is present. Such deficiency may be regarded as one of the manifestations of the presence of a chronic toxic state, and is an indication that the septic focus should be carefully sought for and treated where possible.

2. Where there are lesions due to such states, healing does not commence until the ionic calcium of the blood approximates to the normal figure.

3. By parathyroid therapy it is possible to rectify the calcium balance of the blood much more effectively than by the injection of calcium salts.

4. The therapeutic use of parathyroid substance in the cases described is essentially physiological. It does not appear to act specifically against any one organism, nor any one toxin. Its action is to place the tissues of the patient under conditions more suitable for the performance of their normal functions, and for combating the effects of toxic processes.

NOTE (by W. R. G.).—The septic foci believed to be the primary cause of the calcium deficiency have in various diseases been found in a chronic ear discharge, the tonsils, the accessory sinuses of the nose, a chronic appendix, the gall bladder, probably the colon (as evidenced by colitis), possibly the uterus, but most often in the teeth. In this connexion the ulceration of the gums (pyorrhoea) has often been the cause, since the removal of the tooth has materially altered the condition of the disease for the better. When a red oedematous line leading from the ulcerating margin outlining the tooth is found suspicion should be at once aroused. From personal observation in these cases the apex of the tooth has always shown erosion.

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CARDIAC DISEASE AND OCCUPATION.

BY

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ONE of the most important problems which confront the physician in regard to diseases of the heart is to give sound advice as to occupation. In former days the great importance of rest in heart disease was perhaps somewhat indiscriminately and unconditionally emphasized; nowadays it would seem that more stress is laid upon the advisability of exercise. This does not mean, of course, that medicine has swung violently from one extreme to the other of treatment, but that in days gone by physicians in their writings were more particularly concerned with advanced cases of heart disease, for which rest must always be the prime requisite. The increased facilities for discovering cardiac abnormalities have not unnaturally led medical men to regard such abnormalities as more serious than often they really are, and consequently to apply to them the same line of treatment which would only be suitable in the case of a quite definite disease.

The profession has been gradually learning that cases with cardiac disability are capable of doing much more work than was formerly supposed; true, there have always been wonderful cases of damaged hearts doing extraordinary things, but no prudent physician would base his advice upon abnormal and exceptional cases.

In the case of any cardiac abnormality what one wants to know is whether the abnormal finding indicates any really serious disability at the moment or in the near future. There are quite a number of hearts which it would be well to regard not as diseased but as handicapped, and in much the same condition as a limb impaired by infantile paralysis which limits but does not prevent one's power of walking; no doubt in the case of infantile paralysis it is easier for the patient to discover unaided what he can and what he cannot do than is at first possible for heart cases. Such cardiac conditions would include not only certain valvular lesions and some arrhythmias, but also many hearts with no physical signs which for want of a better term one might describe as "subnormal hearts," where the functional capacity of the myocardium is less than normal, such cases being formerly described perhaps as weak or flabby hearts. Patients with such hearts insensibly drift into sedentary occupations, which suit them fairly well, and it is only when some sudden and unusual output of energy (as occurred so frequently in the army, when cases of this type were enlisted) is called for that the intrinsic cardiac weakness becomes manifest. Many of these cases, however, need not be confined to sedentary work only: they might be much more active, provided they could take their own time over the work. Many of them can earn as good wages as if they had no disease at all.

In a rough sort of way we may think of any given cardiac lesion as of a static or dynamic type, by which, of course, we mean that in the one case the condition seems comparatively stationary, while in the other it is likely to progress. Cases which are likely to be of the static kind are usually those due to rheumatism, chorea, or scarlet fever occurring in early life; while those of the progressive type are in the main the cases which originate from arterio-sclerosis, or in which syphilis is admitted as a cause. Clearly very different occupations will be adopted for these two categories of cases, and it is only for the static ones that much activity can be permitted. Contrary to what is generally supposed, aortic regurgitation, when due to rheumatism, in a young adult has one of the best prognoses of all valvular lesions from the point of view of work; the reason why it has had such a bad prognosis in the past is that such cases have not been sufficiently distinguished from those of arterio-sclerotic and syphilitic origin, which certainly furnish the larger number of aortic lesions, and their prognosis is specially bad.

Are there any general principles which can guide us in the selection of work for cardiac cases? As a rule, all kinds of work which involve sudden spurts, although there may be comparatively long intervals of rest, are bad for most cardiac patients; the life of the docker and of the soldier, just to take two types, is liable to periodical rushes with unduly slack intervals, and such occupations should of course be avoided. In selecting an occupation it is specially important to consider whether the hours are regular and the work more or less the same from day to day and hour to hour, while there need be no undue sense of hurry in the doing of it. This question of regularity in work requires quite as much consideration as the number of foot-pounds of energy which the work may require to be put forth. Work which places a fairly heavy strain upon the lower extremities is much more easily tolerated than that in which the main strain falls upon the arms. Most forms of aortic disease, and undoubtedly those of the degenerative type, seem to be very unfavourably affected by any work which involves even a moderate strain upon the arms, such as carpentering, and this is particularly the case where there is any suspicion of angina. It should also be borne in mind that aortic cases, when otherwise doing fairly well, are often liable to transient attacks of giddiness, which should rule out the numerous occupations which necessitate going up ladders or close contact with machinery. It is unfortunate that there seem to be so many occupations in which "heavy lifting," though by no means the essential part of the work, yet is often required incidentally; thus a man is suddenly asked to move a heavy piece of furniture, and it is this which does the damage and not the regular work itself.

Apart from the actual occupation one should further inquire into how great the distance is at which a man lives from his work, for often it is not so much the occupation *per se* which proves too much for him as the long walk to and from it, with, it may be, a heavy uphill grind at the end of the day, or there may be the added excitement and anxiety about catching trains or omnibuses. Then, too, at the end of the day it makes a good deal of difference if a man lives in a two-storied cottage or has to ascend to the top floor of some model dwelling. In the case of women, the vast majority even nowadays are occupied in some way with a home, the complicated activities of which are not easy to curtail; often, however, the omission of one single item of household labour, such as "washing," may make all the difference to a woman being able to carry on or having to give up her work. Women as a rule are not good organizers of their own work, but the task is difficult, and they might say with Frau von Stein in a letter to Goethe, "It is not perceived that to discharge the thousand little details of life which we have to attend to more ability (for which we get no credit) is required than for the doings of a genius who is at once accorded honour and fame."

As will be gathered from what has been said, it is a great mistake to suppose that cardiac cases can only do sedentary work; many more active forms of work are open to them, but they require selecting and being carefully gone into. Clearly the most important thing to do is to make some attempt to estimate the power of the myocardium. The significance of the myocardium in the estimate of the seriousness of any cardiac lesion was recognized as far back as the time of Stokes of Dublin, who said:

"It is in the vital and anatomical condition of the muscular fibres that we find the way to cardiac pathology; for, no matter what the affection may be, its symptoms mainly depend on the strength or the weakness, the irritability or the paralysis, the anatomical health or disease, of the cardiac muscles."

Such, too, has been the teaching in the medical schools for the last thirty years, but it has certainly been more emphasized during the last few years by Sir James Mackenzie and Sir Thomas Lewis. Yet with the more generally diffused recognition of the importance of the myocardium one cannot say that our ability to appraise the strength of the heart muscle has increased in the same ratio; still, by a careful inquiry into the patient's symptoms and study of the reaction to exercise an approximate estimate of its power can be obtained.

In considering whether a man with a cardiac lesion should remain at his work, one must not take too abstract a view as to how many foot-pounds of energy are required, but how far the work seems to suit the man—how far, if we may so express it, he is psychically attuned to it, for there are many forms of work which might seem intrinsically too heavy, and so they would be for a beginner, yet by long custom and a natural aptitude they have become easy for the particular individual, who has found out how to accomplish a great deal with the minimum amount of exertion; one must, therefore, hesitate long before removing such a case from his work. We must, unfortunately, among other things, distinguish between a man's keenness about his work and his keenness for the wages which his work brings in, for he will continue at work long after he is quite unfitted for it when the wages are particularly good, and it is astonishing how difficult it is to persuade such cases to take on lighter work, with shorter hours, when any sacrifice of wages is involved.

When the question arises as to the future occupation of a boy with valvular disease, which in early life is usually of rheumatic origin, it is always advisable to recommend some sedentary or quasi-sedentary work, for one can never be sure that a second attack of rheumatism may not occur quite soon and damage the heart still further; also boys are only too ready to overstrain themselves if the work they have been started upon is at all heavy.

In advising work for any given case much must depend on the man's education, previous training, general mental equipment, and temperament. It is obviously more difficult to find work for the unskilled than for the skilled, as the former requires more actual physical exertion than such cases should be allowed to give. It is of course most important that a man should work well within the limits of his capacity so that there may be a margin of safety. Nor should it be forgotten that mental and emotional stresses in many occupations may cause a cardiac case to break down nearly as often as physical overexertion.

Men suffering from a cardiac lesion who can be up and about are far too readily sent off to some convalescent home in the country, when what is really most required is some suitable occupation near their own home. It is quite possible for hearts to be underworked as well as overworked. Cardiac convalescent homes should be primarily for women and children, while for men training centres for occupation with an occupational bureau are indicated, such as have been started in the United States by the Association for the Prevention and Relief of Heart Disease.

FURTHER RESEARCHES ON DETOXICATED VACCINES.

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Preliminary Note.

IN an article upon the biochemistry of germs and other proteins by one of us (D. T., *Lancet*, i, 1921, p. 849) it was pointed out that all germs could be split up into several non-toxic yet antigenic fractions, and it appeared that a detoxicated vaccine composed of all the non-poisonous fractions was better than one which contained a single fraction only, as was the case with the earliest detoxicated vaccines.

During the past year researches which have been successful have been made with the object of producing more efficient detoxication. Twelve months ago the average dosage of detoxicated vaccines was from 5,000 million to 20,000 million. As a result of more efficient methods of detoxication the average dosage has been increased at least five times—namely, to 25,000 million to 100,000 million. It seems reasonable to hope that in the near future the detoxication process will be so efficient that doses of one billion germs will be attainable—that is, one million million organisms.

Numbers of this nature convey a very vague impression, but if translated into terms of mass of the semi-solid wet germ substance the actual dose is better appreciated. One million million germs represents roughly a mass of one cubic centimetre of the semi-solid wet bacteria. One hundred thousand million represents, therefore, one-tenth of this value—namely, 1/10 c.cm. of the semi-solid wet germs. Ten thousand million is equal to 1/100 c.cm. of the substance, one thousand million equals 1/1,000 c.cm., and one hundred million equals a dose of 1/10,000 c.cm. These figures vary according to the size of the germ and are only approximate. They are, however, sufficiently correct to convey to the mind a fairly clear idea of the actual doses of germ substance which are represented by hundreds and thousands of millions.

The dose of the ordinary toxic vaccines which have been in general use for the past ten to twenty years averages from five million to one thousand million germs—that is, from 1/200,000 to 1/1,000 c.cm. of the wet germ substance. Now 1/200,000 of a cubic centimetre is practically invisible, and 1/1,000 of a cubic centimetre is about the size of the head of a small pin.

It has seemed to us that injections of such small doses into a comparatively large animal like a man could only produce an infinitesimal amount of antisubstance or immunity. The maximum doses of the first detoxicated vaccines—namely, 10,000 to 20,000 million—represent 1/100 to 1/50 c.cm. of the wet germ mass. This is still in reality a very small dose. The dose attained by more efficient detoxication—namely, 100,000 million—represents 1/10 of a cubic centimetre, and the mind begins to appreciate that a dose of this size may conceivably stimulate the formation of a considerable quantity of antisubstance producing immunity, and experiments detailed below prove that this is the case.

It is our ambition, however, to reach such an efficiency of detoxication that doses of one billion germs, or 1 c.cm. of the wet germ mass, may be inoculated at a time. There can be little doubt that when such doses are attained the immunity produced will be so great as to produce very remarkable curative results. In the domain of preventive medicine, by such massive inoculations we may hope to be able to guarantee a complete and certain immunity from a given disease for a very considerable period of time.

The Importance of Dose in the Production of Antisubstances or Immunity.

The following experiments were carried out in order to prove the great importance of dosage in the stimulation of antisubstances to any foreign protein. Germs are composed of protein material, and it should be remembered that it is a well-proved law that when any highly complex foreign protein is injected into a living animal that animal has the power of developing a contrary substance, or, in other words, immunity to that foreign protein material. The animals used in these experiments were rabbits, and the foreign protein employed was sheep red corpuscles. Sheep red cells are non-toxic in nature, and very large doses can be injected without making the animals suffer in any way.

If we take the serum of an ordinary normal rabbit and mix it with sheep red cells the serum as a rule exerts no solvent or haemolytic action on these foreign cells. If, however, we inject that rabbit with large doses of sheep cells—namely, a total of 5 c.cm. of the semi-solid wet sheep cells—then the rabbit forms a large quantity of antibody (haemolysin) towards the foreign corpuscles. Indeed, the inoculated rabbit becomes so surcharged with the haemolysin that its serum becomes in many instances capable of dissolving the sheep cells, even when it (the serum) is diluted 10,000 to 20,000 times with normal saline. The smaller and smaller the doses of sheep cells injected, however, the smaller and smaller is the amount of haemolysin produced. This is well proved in the following experiments:

Rabbit A was injected with doses of sheep cells corresponding in mass to the doses of ordinary toxic vaccines given to a man. The mass of toxic germs given to a man, as already stated, amounts to 1/200,000 c.cm. to 1/1,000 c cm. A rabbit, however, is on the average at least twenty times smaller than a man, so corresponding doses of sheep cells would be 1/4,000,000 to 1/20,000 c.cm. of the semi-solid wet cells. Doses of this size, however, were apparently too minute to stimulate the formation of any appreciable or detectable amount of haemolysin. The haemolytic titre of this rabbit's serum

was tested against sheep cells every few days after each inoculation, but the result was more or less negative.

Rabbit B was injected with doses of sheep cells corresponding in mass to doses of detoxicated vaccine varying from 1,000 to 100,000 million germs—that is, doses of 1/20,000 to 1/200 c.cm. There was no appreciable rise in the haemolytic titre of this rabbit's serum until doses of 1/400 c.cm., corresponding in mass to 50,000 million germs, had been given. With doses comparable in volume to 50,000 million germs and upwards in a man the haemolytic titre, however, rose in a very remarkable degree, so that the serum became potent even in a dilution of 1 in 100.

Rabbit C was inoculated with doses of sheep corpuscles corresponding to doses of 1,000,000 million (one billion) germs, or 1 c.cm. of the semi-solid wet germ substance aimed at in a man. (The rabbit being one-twentieth the weight of a man received actually 1/20 c.cm. doses of the semi-solid moist sheep cells.)

Each dose of this size produced a very marked rise in the haemolytic titre of the rabbit's serum, and after seven such doses the eventual immune power of this rabbit rose to the extent that its serum was capable of dissolving the sheep cells when it was diluted 1 in 480 parts with normal saline. In order to get much higher immunity in rabbits wherein the serum is haemolytic to sheep cells at a dilution of 1 in 10,000 to 1 in 20,000, it is necessary to inject cubic centimetre doses of the sheep corpuscles.

It is logical to assume from these experiments that, in order to obtain a similar highly potent antiserum in man towards bacteria, similar massive doses of germ substance must be injected. Furthermore, for successful immunity it is not necessary to get severe toxic reactions, as many imagine. Sheep corpuscles are very non-toxic. They are hundreds of times less toxic than the most efficient detoxicated vaccines ever produced. The inoculations which were given to the above rabbits produced no toxic reactions whatsoever, yet the graphs of Rabbits B and C showed an enormous immunity response.

With regard to vaccine therapy there is still another fallacy or heresy which is frequently preached—namely, that if one injects too much vaccine the system becomes tired and overworked so that it can produce no more antibody. If a rabbit can keep on producing antibody to doses of sheep cells totalling 5 c.cm. of the solid moist corpucles, surely doses of germ substance amounting to a minute fraction of a cubic centimetre will not exhaust the immunity-producing powers of a man who is enormously greater in weight and size than a rabbit.

It would seem more near the truth to say that it is the toxins of the germs which tire and exhaust the system. These toxins require to be removed, so that enormous doses of the germ substance proper may be given. We wish to develop in our serum a quality which will destroy germs by dissolving or lysing them. Such an immune serum would be a much more valuable possession than a serum which simply neutralized the poison of the germs. In any case it is stated in practically every modern work on immunity that it is very doubtful if antisubstances can be produced against the endotoxins of germs. These endotoxins are allied to the amino-acid derivatives of proteins, and it is known that no antisubstances are formed against such simple derivatives. Again, even if antisubstances can be formed against them, they are too toxic to permit of large enough doses to obtain any appreciable amount of such an antisubstance. Against certain toxins it is true that good immunity is produced—for example, against diphtheria and tetanus toxins. These toxins, however, are highly complex protein substances, allied to snake venoms, and are quite different from the usual simple endotoxins of germs.

It is stated that antimeningococcal serum is an anti-endotoxic serum, but this perhaps is not quite correct. The so-called meningo-endotoxin which is injected into horses to obtain this antiserum is a watery extract of meningococci, and is likely to contain much non-toxic meningococcus protein, such as proteoses, etc., as well as the true endotoxin. In the serum of the injected horses, therefore, there will be developed a considerable amount of antisubstance to the protein material of the meningococcus, and this may account for its successful therapeutic results when injected into human beings suffering from this disease.

Improved Detoxication Process whereby Doses of 100,000 million Germs may be given.

About eight months ago it was discovered that in the first stage of the detoxication process—namely, the solution of the germs in NaOH—some of the germs invariably escaped the solvent action of the alkali, and that when acid was added, a certain number of unautolysed germs were carried down in the precipitate of germ metaprotein. In other words, the non-toxic precipitates of the germ substance contained a small proportion of the unaltered toxic germs themselves. The presence of these unchanged toxic bacteria, though few in number, was nevertheless responsible for a large amount of the toxic action residing in the so-called detoxicated vaccines. In other words, the detoxicated vaccines of a year ago were really a mixture of the non-toxic fractions along with a small proportion of the unchanged toxic germs.

This defect has now been avoided by passing the solutions of each germ fraction through a Chamberland filter before precipitating them. The precipitates obtained in this way after porcelain filtration were found to be about ten times less toxic than before. This filtration process alone, therefore, has brought about a tenfold increase in the dosage of the detoxicated vaccines.

This success, as already stated, leads one to hope that still more efficient detoxication will be attained whereby the ultimate aim of giving 1 c.cm. doses of the semi-solid wet germ protein will be reached. The rabbit experiments described lead one to hope that such massive doses will confer on man an extraordinarily powerful immunity, and that they will exert a very efficient curative action on various diseases.

Machine for Crushing Germs.

In order to remove the poisons which reside within the bodies of germs, the latter must be entirely disintegrated or autolysed. For this disintegration of the bacteria we have up to the present relied entirely upon the dissolving or disintegrating action of chemicals, such as weak alkalis, acids, alcohol, etc. Where weak chemicals are used the protein substances of the germs are not so injured or changed as to effect their specific immunizing properties. For example, it has been demonstrated by Balls and Korns (1918) that if red cells are dissolved in weak NaOH and the protein substance is then precipitated with weak HCl, this protein precipitate when injected into rabbits has still the power of causing the formation of specific haemolysins in the latter. Similarly it has been shown by Kolmer (1917) that specific immunity is produced against certain tissue cells when animals are inoculated with the metaprotein of these cells treated in this manner.

It so happens, however, that certain germs require very strong alkali, and even antiformin, to dissolve or disintegrate them, and such powerful chemicals are likely to have a deleterious effect upon the specific antigenic properties of the germ proteins. For this reason during the past two years strenuous endeavours have been made to find some mechanical means of disintegrating germs, in order, so far as possible, to avoid the use of strong chemicals in the detoxication process. Several machines were devised and constructed for this purpose with varying degrees of success. A machine was devised recently by Plauson which was claimed to have the power of smashing substances into colloidal form. Through the courtesy of Messrs. Plausons, Ltd., the disintegrating effect of this machine on germs has been tested. Emulsions of yeast and staphylococci were subjected to the smashing effect of the machine for thirty minutes, and they came through the test unaffected. It is the insignificance of germs which saves them, since they measure about 1/30,000 to 1/50,000 of an inch in diameter.

With the aid of a designing engineer, Mr. Macfie, one of us has been able to construct a small machine which has a cutting as well as a grinding action. It is capable of giving from 5 to 20 million cuts in the emulsion a minute. This machine, in the first few tests made, appears to be more efficient than the Plauson smasher, and it has enabled the writers to employ much weaker chemicals in dissolving the germs than hitherto used. With the present design, however, it is still incapable of smashing the germs in water—that is, without the aid of some chemical. When very fine carborundum powder, however, is added to the watery germ emulsion and the mixture smashed in the machine the disintegration effect on yeasts or germs was very considerable without the aid of any chemicals at all. There is no doubt that this machine should mark a very considerable advance in the detoxication process, and much better vaccines will be obtained by its use. It has been returned to the maker for some alterations in design which are calculated to make it more efficient, and it is hoped that the end in view—namely, the disintegration of germ emulsions with very weak chemicals or even without them—will very shortly be attained.

The authors wish to express their thanks to Mr. E. S. Dean and Mr. F. T. Downing, who have been associated with them in this research.

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STRANGULATED DIRECT INGUINAL HERNIA.

BY

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THE formation of a direct inguinal hernia is due, in the majority of cases, to repeated distension of a weak point in the posterior wall of the inguinal canal. In such cases the abnormal opening in the abdominal wall is usually large, and the edges of the opening offer little resistance to the protrusion of bowel or omentum within the hernial sac. Occasionally, however, when the intra-abdominal pressure is suddenly increased, the weak point in the posterior wall of the inguinal canal undergoes instant rupture, and it is in these cases that strangulation is apt to occur.

In the case to be described the strangulation was probably caused simultaneously with the origin of the hernia—that is to say, a split occurred in the medial portion of the posterior wall of the inguinal canal (conjoined tendon) which allowed of the protusion of a knuckle of gut—covered, of course, by a layer of parietal peritoneum—into the inguinal canal. The tension of the conjoined tendon tended to approximate the edges of the split and thus prevented the reduction of the hernia and also imperilled the blood supply of the herniated gut, producing its strangulation. Strangulation of a direct inguinal hernia is an event of somewhat uncommon occurrence, and the following case, which was recently under my care, may be regarded as a fairly typical example of this condition.

The patient, a carter, aged 62, was admitted as an urgency case under my care at the Ancoats Hospital, complaining of a painful swelling in the right groin. He stated that, about eight hours previously, whilst loading a cart, he felt a sudden pain in the lower part of his abdomen. At first he endeavoured to disregard the pain, but as it did not disappear he left his work and returned home. Here he noticed a swelling in the right groin, and on going to his doctor was advised to seek treatment immediately at Ancoats Hospital. He gave a previous history of a hernia which was easily reducible, on the *left* side, but he was quite sure there had never been one on the right side.

On examination the patient was a fairly muscular man, but looked decidedly ill. Over the inner third of Poupart's ligament on the right side there was a rounded tender swelling, tense, elastic, quite free above and below, and apparently not communicating with the internal abdominal ring. There was no impulse on coughing, and gentle taxis failed to have any effect on its reduction.

On the left side there was an easily reducible direct inguinal hernia. Operation was immediately carried out. The inguinal canal was opened by division of skin and external oblique aponeurosis. The hernial sac at once presented itself, and on isolation was found to be entirely free from, and external to, the spermatic cord. The neck of the sac was traced to the conjoined tendon. The sac, which was extremely thin, was then opened. A quantity of the usual blood-stained peritoneal fluid escaped, and a knuckle of bowel of the Richter type, and plum-coloured, was seen. Digital examination of the neck of the sac from within showed that the constriction was due to tension of the conjoined tendon. A hernia director was passed within the sac, and the tendon was divided in a medial direction. The gut was drawn out of the abdominal cavity, found to be viable, and then reduced. An attempt at a radical cure for the hernia was made by ligaturing the sac, suturing the split in the conjoined tendon, and then suturing the internal oblique muscle to Poupart's ligament.

The patient made an uninterrupted recovery, and was discharged from hospital seventeen days after admission.

THE Fifth Italian Congress for Industrial Diseases will be held at Florence from June 11th to 14th, when the following subjects will be discussed: (1) Rural hygiene since the war, especially in relation to malaria, introduced by Professor A. Monti; (2) new and old views on lead poisoning, introduced by Professor C. Biondi; (3) reform of legislation relating to industrial accidents, introduced by Professor Borri; (4) prevention of disabilities following disease, introduced by Professor L. Devoto. An exhibition will be held illustrating the most recent methods for preventing industrial accidents.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

TUBERCULOUS PERICARDITIS.

MEDICAL literature contains so few references to tuberculous pericarditis that I feel justified in recording the case mentioned below as being of interest.

A student, aged 23, who had arrived in England for the first time eighteen months previously from a colony, was admitted to the hospital of SS. John and Elizabeth on April 13th, 1921, with a history of having taken to bed for a week with marked malaise and rise of temperature. There were no other symptoms whatever. He had always enjoyed excellent health, and had never suffered from any pulmonary complaint. On admission his temperature was 103.6° F., pulse rate 120, and respiration rate 40. He was tall, thin, and of a pallid complexion. His breathing, though rapid, was unembarrassed. The tongue was clean.

On examination the right side of the chest was almost motionless and dull from the fourth rib downwards, where vocal fremitus was almost absent. Breath sounds were prolonged and high-pitched above and practically absent below the fourth rib. The apex beat of the heart was displaced to the left, and an exocardial to-and-fro murmur was heard. Aspiration of the right chest yielded 20 ounces of clear fluid, which on microscopic examination showed neither cells nor bacilli, and on culture this remained sterile. A diagnosis of pleural and pulmonary tuberculosis was made.

The murmur at the cardiac apex became more marked as time progressed, and seemed rougher and louder on expiration, and on May 19th some fine crepitations were heard in the right mid-axillary line, both on inspiration and expiration. These extended anteriorly on the 31st, when a very marked rough creaking pleural rub was also heard over the left base anteriorly. Night sweats at this date became very marked. Repeated examination of the sputum revealed no tubercle bacilli. The cardiac area of dullness appeared to increase gradually to the left and right, and on June 6th the exocardial murmur, which had been getting less audible, disappeared, and at the same time the heart sounds became less distinct. Breath sounds in the left mammary region were now harsh, and in the right scapular region almost tubular in character and accompanied by fine crepitations. Emaciation became more marked. Tuberculous pericarditis was now diagnosed.

X-ray examination on June 16th showed an enormous cardiac shadow, and loss of pulsation; this was suggestive of pericardial effusion. Paracentesis pericardii was performed on three occasions with obvious relief to the patient. The fluid obtained, altogether 8 ounces, was sanious in character, and sterile in direct films and culture. No tubercle bacilli were detected. The right base was also aspirated and a similar fluid obtained, which was shown to be sterile bacteriologically. The patient died on July 1st. During his illness the temperature was continued for the first ten days; subsequently it was intermittent, ranging between 97° and 102° F.; the pulse rate varied between 90 and 140, respirations from 18 to 35.

Post-mortem Examination.—The body showed extreme wasting. On opening the chest the parietal pericardium was found to be very thickened, in parts up to a quarter of an inch, and was fused with the thickened visceral pleura. The visceral pericardium was markedly thickened by a deposit of caseous material to the extent of half an inch. The pericardial cavity was dilated and contained approximately 8 ounces of sanious fluid. The heart muscle was very pale and flabby; the valves were competent. The pleurae were thickened and contained some free fluid; and the lungs, which were adherent to these in parts, especially on the left, showed numerous miliary tubercles, but practically no evidence of old tuberculosis. The mediastinal glands showed moderate enlargement. The liver, spleen, and kidneys showed amyloid degeneration; the latter had a few miliary tubercles, and the peritoneum was studded with these. Free fluid was present.

For kind permission to publish this case I am greatly indebted to Dr. A. Saunders, Physician to the Hospital of SS. John and Elizabeth.

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REFERENCE.

Adrien Forestier: "Études Cliniques de la Péricardite Tuberculeuse avec atteinte des autres Séreuses."

RUPTURED HEART.

THE following case seems to me of sufficient interest to place on record, as it illustrates how a fatal result may follow a very slight effort in a person who was not apparently seriously ill, her chief complaint being of shortness of breath.

On January 10th, 1922, I was called hastily and found a fairly well nourished woman lying on her back on a bed. She was quite dead. The only person in the house besides the dead woman was her husband. He said his wife was about 50 years of age, was almost a teetotaler, and had never been really ill before, but a few months ago had had an upset and had lately complained of shortness of breath. On this particular day, not feeling very well, she stayed in bed; during the morning he heard a noise as of someone falling,

went upstairs and found his wife lying on the floor quite motionless. She never moved again. He lifted her on to the bed and sent for me. So far as one could gather from the husband she just got up out of bed and fell down dead.

Post-mortem Examination.—There were no marks of violence or bruising on any part of the body. On raising the sternum the pericardium was found to be full of blood clot and there was a rent in the anterior wall of the left ventricle about three-quarters of an inch long; the heart was enlarged, and there was marked fatty infiltration of the organ; there was also some thickening of the aortic valves.

Bishopston, Bristol. J. ANGELL JAMES.

Reports of Societies.

WAR WOUNDS IN RELATION TO LIFE ASSURANCE.

AT a meeting of the Assurance Medical Society on May 10th, with the President (Dr. R. A. YOUNG) in the chair, a discussion took place on "War wounds in relation to life assurance." A similar discussion was held in the society three years ago, when a table was presented by Mr. McAdam Eccles (*Transactions* of the Society, 1919) containing certain suggestions for the acceptance, with or without load, or the rejection of lives damaged in the war.

Mr. MCADAM ECCLES said that later experience had proved the necessity of very few corrections in that table. He had urged that all cases of penetrating gunshot wounds of the head which gave rise to mental changes or fits should be rejected, but perhaps this was too sweeping a counsel so far as the fits were concerned. It was possible also that some would take exception to his advice that cases in which there had been fracture of the skull, with operation, loss of bony substance, visible pulsation, but no serious symptoms, might be accepted, with a debt, according to the nature of the case. Quite a number of such cases had now had the gap in the bone filled up by bone taken from elsewhere in the body, and some of the patients had been completely restored to their normal, with no headache, fits, or obsessions of danger, and no want of concentration. He would be inclined to accept such cases at ordinary rates if they had had three years of good health from the time of the operation. In fractures of the base of the skull, the result of aeroplane accidents, there were cases in which the proposer had apparently suffered little permanent damage as a result of the injury, and some of these cases might be accepted at small load, or even at ordinary rates. He adhered to his original recommendations with regard to gunshot wounds of the neck, that when there was no permanent disability the case should be accepted at ordinary rates, when there was need for a tracheotomy tube the case should be rejected, and when there was slight damage to larynx or injury to the large vessels or nerves there should be a load of three to five years; he would add, however, that in this last category care should be taken that there were no resulting symptoms of the injury, such as a traumatic aneurysm, which might give rise to an embolism, causing hemiplegia. In his original suggestions with regard to injuries to the abdomen he had omitted those cases in which the spleen had been removed for injury; many of these recovered entirely, and if there was not a definite history of removal of the spleen it would be difficult to tell that the organ was missing. The proposers might be accepted at ordinary rates three years after complete recovery, but in any case where examination of the blood showed a want of return to the normal a load of five years, or even rejection, must be advised. He also raised the question of cases in which there had been amputation of both upper or both lower extremities—whether these should be accepted, and, if so, at what load. In conclusion, he reminded the society that all the men concerned had served their country well, and should have every consideration when they presented themselves for assurance.

Mr. G. E. GASK dealt with war wounds of the chest and their prognosis in relation to life assurance. He thought that wounds of the parietes without injury to the internal viscera need not be considered as having impaired the life; also that the vast majority of men who had suffered from perforating wounds of the chest unaccompanied by retention of a missile or the formation of an empyema were now completely cured and might be considered as sound lives; but that men who developed an empyema following a wound of the chest ran a grave risk, and he thought the actual damage comparable to that resulting from an empyema which followed an attack of pneumonia. In assessing their life value it must be remembered that they had successfully passed through a severe illness, and that the efficiency of one lung might have been permanently impaired. Perforating wounds associated with a persistent empyema-sinus or retention of pus in the chest constituted a grave risk to life, but the number of men now suffering from this condition must be very small. As for retained missiles, a missile which had remained for four or five years embedded in the muscles was not likely to give rise to trouble. A missile lodged in the lung or mediastinum must be considered an added risk to life, and a piece of metal with jagged edges was more dangerous than a smooth bullet.

Dr. ALDREN TURNER spoke of gunshot injuries to the head in relation to epilepsy. There were two groups of epilepsies to be considered: (1) Genuine traumatic epilepsy with definite brain lesions, and (2) the less common group in which epilepsy occurred without obvious injury of the brain. This second group was the more difficult to consider from the point of view of prognosis and treatment, and in war cases from the point of view of attributability. In the first group most of the cases had hemiplegia or some definite evidence of lesion of the central nervous system, and there was no difficulty at all in adjudicating direct attributability in epilepsy of this type. The fact that a man who had had a gunshot injury to his head with brain lesion developed a traumatic epilepsy a few months later was a reason, he thought, for granting the full disability pension irrespective of whether any member of the man's family had had epilepsy. It had been possible to divide a series of cases presented to a medical board into traumatic epilepsy of an idiopathic character and epilepsy of the Jacksonian type. In nine cases out of eleven Jacksonian epilepsy had been cured by operation, which showed that the condition was not epilepsy in the strict acceptation of the word, but a cortical irritation due to a definite lesion. It was held by Sargent that it was due to a vascular change occurring periodically at the seat of injury. In many cases the brain was anchored to the cicatrix, and a change in the position of the head might lead to an epileptic seizure. Out of 18,000 cases of gunshot injuries to the head under the care of the Ministry of Pensions, only 800 (or 4½ per cent.) had developed traumatic epilepsy, a proportion very similar to that obtaining in the Franco-Prussian war of 1870. The smallness of the relative number suggested that research must be carried farther afield, and an attempt made to discover how this epilepsy occurred, and whether there was any hereditary and constitutional disposition. He could not help coming to the conclusion that in this particular form of traumatic idiopathic epilepsy following upon gunshot injuries with organic lesion of the brain, the epilepsy was really a symptom of an inherited or inborn neuropathic condition. From the point of view of assurance, these cases ought to be regarded as idiopathic epilepsy was regarded in civil life—namely, as not uninsurable, provided other conditions were normal.

Dr. OTTO MAY asked whether Dr. Turner had had any experience of epilepsy arising after, and possibly caused by, injuries to parts of the body other than the head. In a case of fracture of the leg, when there was no obvious head injury nor any loss of consciousness, the person concerned had his first epileptic fit five months after the accident, and had had five or six since; there was no family history, and the only thing to be detected on examination was a certain tremulousness of the face muscles, which made him think of the possibility of a syphilitic condition, precipitated by the shock of the accident.

Dr. OGIER WARD asked what was to be done in cases in which missiles remained in the limbs—embedded in the head of the tibia, for instance, or in the cavity of the long bones. As for the loss of two limbs, it used to be remarked that one never saw a man who had undergone a double amputation survive to old age. That might have been due to the great drain upon his vitality, in pre-aseptic days, from the shock of the operation. There was still shock under anaesthesia, though, of course, the patient did not feel it, and it was a question how far it reacted on the constitution.

Dr. A. CHARLES GRAY asked whether a man who had lost one or both lower extremities should be definitely loaded, and whether there was increased risk of accident or of ill health. Dr. H. W. COLLIER gave an interesting account of two cases in which fits occurred after head injuries sustained in aeroplane crashes. The first fit occurred in one case as long as four years, and in the other as long as six years after the

accident. Dr. G. G. HOWITT contested Mr. Eccles's advice, in wounds of the head and face, to reject a case in which there had been depressed fracture and no operation. He thought that it all depended upon the position of the depressed fracture. Dr. SANDERSON, of the Ministry of Pensions, said that experience in his department bore out the general reliability of Mr. Eccles's table. Certain researches had been carried out on the after-effects of gunshot wounds of the head, chest, and abdomen, but these were not yet published. Not many cases were available, and it was surprising that the resulting injury seemed to be very much less than might have been anticipated; it was difficult even to secure the men's attendance at hospital. He had found no obvious connexion between gunshot wounds in the chest and liability to tuberculosis.

The PRESIDENT spoke with regard to Mr. Gask's five categories of chest wounds. Cases which had had wounds of the parietes without injury to the internal viscera he would accept without any load at all. Perforating wounds of the chest, without retained missile or formation of empyema, would make him look closely to see what degree of adhesions or limitation of lung movements had occurred, and if there were any such he would be inclined to put on a slight load. The same applied to perforating wounds which were complicated by the formation of an empyema, now soundly healed. He would reject cases of perforating wounds associated with a persistent empyema sinus or retention of pus in the chest; and in cases with retained missile he would be guided by the result of an *x*-ray examination.

Mr. MCADAM ECCLES, in replying on the discussion, agreed with Dr. Aldren Turner that in traumatic (possibly called idiopathic) epilepsy one generally found, on careful investigation, a previous family history, not necessarily of epilepsy, but of some nerve condition, and that the true Jacksonian cases were much better from the point of view of life assurance than the traumatic (idiopathic) ones. In answer to another point, he had not seen a single case of retained foreign body in a lung which had developed tubercle. There were cases of damage to the lung in which tubercle had come on afterwards, but tubercle was such a common disease that it might have developed in any case. He agreed with Dr. Howitt that a case in which there was a depression over the frontal region, particularly the frontal sinus, which led to no symptoms at all, might be taken at ordinary rates; but he was always chary of a depressed fracture. As for the amputation of the lower extremities, any increased risk of accident was counterbalanced by the likelihood that a man who had thus suffered would take extra care; but the important factor was the narrower opportunity of healthy exercise in such cases. The great danger of missiles retained in the limbs arose from sepsis, sometimes arising on the occasion of a trivial operation after everything had been apparently quiescent for years.

"APPENDIX DYSPEPSIA."

AT a meeting of the Liverpool Medical Institution held on April 27th, with the President (Dr. J. HILL ABRAM) in the chair, Dr. R. J. M. BUCHANAN read a paper on appendix dyspepsia. In a brief historical sketch of the development of the diagnosis and the surgery of the appendix Dr. Buchanan referred to the so-called pelvic abscess in women, which was formerly opened by gynaecologists, and was in his opinion appendicular in origin. He referred to the appendix as the mimetic organ of the abdomen, and in this connexion reviewed the literature of early appendicitis and its gradual recognition and separation from the other better known acute conditions such as perforated peptic ulcer, cholecystitis, volvulus of small intestine, ruptured ovarian cyst, pleurisy, and pneumonia. Proceeding to chronic conditions he showed that the appendix was even more mimetic. Chronic appendicitis and peptic ulcer were closely allied in symptomatology, and operations for peptic ulcer frequently revealed a chronic appendicitis as the cause of the symptoms. Important points in diagnosis he indicated as follows. Remission of symptoms in duodenal ulcer. Radiation of epigastric pain to the lower abdomen suggested appendicitis, as did tenderness over the appendix area. Relief of pain in peptic ulcer by taking food did not hold for cases of appendicitis, and over long periods alteration in free HCl obtained in appendicitis. The dorsal pain of ulcer was rare in appendicitis; alkalis and bismuth rarely gave relief in that condition. There was not the same constancy in appendicitis of pain referred to meals and not the same intensity of pain—merely discomfort. Appendix pain was increased by exertion, and there was no complete remission of pain or dyspepsia. He referred to a case of chronic appendicitis simulating hour-glass stomach by *x*-ray examination, but manifesting tenderness over the appendix area. Laparotomy demonstrated an inflamed appendix showing that the *x*-ray hour-glass appearance was due to reflex spasms. Appendicectomy relieved all symptoms. He suggested that many cases of "ovaritis" in women on the right side were really chronic appendicitis, and he referred to the frequent association of the two conditions and advocated surgically a median incision. In the association of chronic appendicitis with colitis the appendix was often the harbour of infective noxae.

He instanced one case of diarrhoea persisting for many years where Dr. Cronin Lowe obtained an almost pure culture of *Bacillus enteritidis* in the stools. The appendix on removal was found to contain a pure culture of the organism. The operation combined with an autogenous vaccine led to complete recovery and the disappearance of the organism from the stools.

He mentioned the association of chronic appendicitis with distended caecum and a vascular Jackson's membrane and emphasized the importance of combining an appendicectomy with plication of the caecum in these cases. Emphasis was laid upon the importance of realizing that appendix pain was referred to all regions of the abdomen and even down the right thigh, and that retrocaecal inflamed appendices simulated lumbago and cholecystitis.

Dr. Buchanan referred to the *x*-ray appearance in appendix disease and insisted on the importance of a "watch through" examination, and he was of opinion that sufficient attention was not paid by radiographers in recording the filling, emptying, beading, etc., of the appendix. He advocated a more complete examination at shorter intervals. He thought that an appendix which filled and retained barium or bismuth after the caecum had emptied should be removed. He held that chronic appendicitis should be suspected in any case complaining of chronic and obscure dyspepsia symptoms—for example, pain after food erratic in time, character, intensity, and situation, often referred finally to the right iliac fossa, with nausea, occasional vomiting, fullness and feeling of flatulent distension, acidity and water brash, symptoms of general malaise (with or without a history of previous acute abdominal pain), pain and discomfort remittent rather than intermittent, aggravated by exercise and relieved by rest, elicited by rotatory manipulation of the right thigh—in which diet and the usual therapeutic measures did not relieve completely pain which might be elicited by palpation of the appendix and referred to one or other of the regions already mentioned. Such a condition was often associated with irregularity of the bowel, general digestive discomfort and malaise, the *x* rays revealing an appendix retaining food (or even failing to show this, for the constriction might be at the opening). A condition of clinical obscurity, not fitting in with any classic syndrome of other abdominal lesions, should always lead one to suspect chronic appendicitis and act accordingly.

Mr. W. THELWALL THOMAS alluded to the frequency of cases of vague abdominal symptoms, described as indigestion, which often could not be definitely referred to the contents of the upper abdomen. *X*-ray examination in recent years had greatly assisted in clearing up the difficulties as between gall stones, gastric or duodenal ulcer. There remained many cases which could be referred to the appendix, and here radiology in expert and shrewd hands materially helped with the diagnosis. The association of alternate constipation and diarrhoea, accompanied by pains in the right iliac fossa, and referred on pressure to the remote parts of the abdomen, was strong evidence of chronic appendix trouble. He was not prepared to admit haematemesis as a sign, having seen some cases where, after removal of the appendix, the bleeding reappeared. Operative interference was necessary in these cases, and he was gratified to find that physicians were becoming actually enthusiastic in this direction. Where the caecum was dilated and proptosed into the pelvis with a well-marked Jackson's membrane, he removed this tissue, infolded the caecum, and fixed in the iliac fossa, with satisfactory results.

Mr. THURSTAN HOLLAND showed a number of lantern slides illustrating the various points of importance in the *x*-ray examination of the appendix. He emphasized the fact that there was as a rule no difficulty in visualizing the appendix; there was no special hour after taking the meal at which it was most likely to be full of the barium food, but that it might be on view at any time after the food had reached the caecum

and ascending colon. He also stated that in his experience no special preparation of the barium meal was either necessary or advantageous; he had found that with the ordinary mixture of bread-and-milk and barium, so often used for stomach examination, the appendix was seen just as often as after the much-vaunted buttermilk meal. Of the value of an *x*-ray examination of the appendix in cases with vague gastric symptoms there could not be any doubt.

Syphilis of the Nervous System.

Dr. BAKER YOUNG read a short paper on syphilis of the nervous system, with special reference to intrathecal therapy, based on the treatment of 109 cases of late syphilis and parasyphilitic conditions of the cerebro-spinal system. The results of the treatment of these cases by intrathecal injection of reinforced salvarsanized serum was demonstrated. The findings of the cerebro-spinal fluid were correlated with the change in clinical symptoms. Dr. Baker Young held that this method of treatment was effective in cases which were not influenced by any other therapy, and emphasized the importance of adopting this treatment in progressive cerebro-spinal syphilis.

Professor W. H. ROBERTS recounted the results of his work on the estimation of the arsenical content of the cerebro-spinal fluid. He had found no trace of arsenic in the fluid after intensive intravenous treatment, but had shown the presence of arsenic in 19 cases out of 29 one week after intrathecal injection. The proportion of arsenic varied from 0.5 to 2 parts per million.

Dr. L. S. ASHCROFT discussed the paper from the pathological side, and supported Dr. Baker Young's views. Dr. A. DOUGLAS BIGLAND criticized the procedure, preferring the older methods of treatment, which were effective and less troublesome. Dr STOPFORD TAYLOR also favoured the older methods of treatment.

AN ALTERNATIVE METHOD OF ADMINISTERING VACCINES.

AT a meeting of the Edinburgh Medico-Chirurgical Society held on May 3rd, Sir ROBERT PHILIP presiding, Mr. DAVID LEES, F.R.C.S., spoke of various methods devised to overcome the toxicity of vaccines in the production of active immunization, and gave an account of his use of Besredka's method in over a hundred cases. These were chiefly cases of infection of the lower genito-urinary tract, gonorrhoeal in nature, including acute conditions as well as subacute and chronic, but comprising also other kinds of general and local infections. The method, as practised by him, was to give a very small preliminary desensitizing dose, about 1/1000 to 1/100 of the ordinary dose of the specific organism; this was followed by the immunizing dose, if intramuscular, three to four hours later; if intravenous, ten to twenty minutes later. In most of his cases the immunizing dose was given intravenously, and in the case of gonococci the dose was often 10,000 to 20,000 million. In the gonorrhoeal cases, local treatment of the urethra by weak permanganate solutions was also given, and the usual dietetic and general treatment carried out. The results in a series of cases were detailed, excluding early cases of acute gonorrhoea a few hours after the onset of symptoms, established acute cases, acute complications such as epididymitis and salpingitis, acute *B. coli* infections of the bladder. The standards of cure were absence of clinical symptoms for a long period and negative bacteriological and serological tests. In a certain number of cases this standard was attained, and the immediate effect of relief of symptoms was striking and rapid; in others the result was not so good. He had found the cases most suitable for this treatment were those of early gonorrhoea, within twenty-four hours of the onset of symptoms, and the acute exacerbations of chronic cases; in established cases it certainly lessened the gross signs and symptoms. By this method it was claimed that much more potent doses of vaccine could be given, not only in subacute and chronic infections of the lower genito-urinary tract, but also in acute infections, and this with only minimal reactions, local, focal, and general. As a method of treatment it was still in the experimental stage, and he had not reached a final opinion as to its value.

Plastic Surgery of the Nose.

Dr. DOUGLAS GUTHRIE gave a lantern demonstration on this subject, showing also three patients who had undergone operation for nasal disfigurement from lupus, congenital syphilis, and injury. The reconstruction of the nose was no modern invention of surgery, for Tagliacozzi, as early as 1570, had perfected the method of transferring a flap from the arm to form a new nose—the so-called Italian method—and this operation was still in vogue. The sacrifice of a finger to gain a nose was also sometimes practised, but was hardly justifiable. These operations had now been largely superseded by the use of local flaps from the forehead, the Indian method of Keegan and other I.M.S. surgeons, and improved by the recent work of Major Gillies. The various stages in a case of nasal reconstruction in a man whose nose had been destroyed in an electrical accident were then shown. It was essential to provide a lining for all flaps to avoid subsequent shrinkage, and support was secured by embedding strips of cartilage in the tissues destined to form the flap. Considerable time should be allowed between the stages of the operation. At times it was advantageous to employ the long tube flap from forehead or neck. Gross defects requiring complete rhinoplasty were less frequent than minor deformities of a part of the nose. Cases belonging to this latter group of lupus, of syphilitic deformity, of a horse-bite of the tip of the nose, and of harelip deformity were shown, and the details of reconstruction described and the results demonstrated by lantern slides.

Therapeutic Value of Quinidine Sulphate in Auricular Fibrillation.

Dr. W. T. RITCHIE briefly alluded to the literature of the subject since the publication of papers by Frey in 1918. In over 200 reported cases of auricular fibrillation restoration of the normal rhythm after use of quinidine sulphate had been claimed in 57 per cent. High claims had been made for the drug, and it was alleged to obviate the necessity of continuing digitalis. He presented a personal study of 12 cases in which quinidine had been tried and its effects observed. Of the 12, eight were men and four women; they included 8 cases of mitral valvular disease (a majority rheumatic), 1 exophthalmic goitre, 1 melancholia, 1 syphilitic myocarditis. The results had been permanent restoration of the normal rhythm in one case; for a considerable period in one; a transient restoration in one. Fibrillation had been replaced by flutter in one case, while the drug had failed to affect the rhythm in eight of the twelve cases. From the point of view of symptoms and general condition only two cases experienced benefit. The usual dosage had been employed, 0.4 gram thrice daily, with an initial smaller dosage. The number of cases was small, but the results were not encouraging and did not support the high claims advanced for the drug. He had failed to get indications as to types of case more suitable than others for quinidine sulphate. But if the drug succeeded in a particular case it would again be successful if auricular fibrillation were resumed. He had met with unpleasant results in its use: it might increase the ventricular rate, and, if so, should be combined with digitalis; it also might set up multiple ventricular extra-systoles; and there was also some danger of embolism from dislodged clot in the auricles. He considered that quinidine should not be used in cases where there were such signs of cardiac failure as dilatation of the heart, dropsy, or cyanosis. The action of quinidine on the heart might be considered, in relation to Lewis's theory of circus action of the auricles in fibrillation, as a lengthening of the refractory period of the auricle; but there was no evidence that it could modify or remove the inflammatory or degenerative changes in the ventricular walls that were present in those cases. The disappointing results of the drug were probably due to the confinement of its influence to the abnormal auricular function.

Dr. D. MURRAY LYON confirmed these observations from his experience of quinidine sulphate in seven cases. When given without digitalis it seemed to have a toxic action on the ventricle, and it was advisable to employ digitalis before it or along with it. It was not a safe drug to use unless its effects were carefully controlled by the electro-cardiograph or the polygraph.

A CONGRESS for the sanitary reorganization of Spain will be held at Madrid in June, 1923. The president of the executive committee is Dr. Verdes Montenegro.

A CONGRESS of French-speaking dermatologists and syphilologists will be held in Paris from June 6th to 8th, at the St. Louis Hospital, under the auspices of the French Dermatological Society. Arrangements are being made by Dr. Hudelo, 8, Rue d'Alger, Paris.

Reviews.

BLOOD TRANSFUSION.

THE book by Dr. GEOFFREY KEYNES on *Blood Transfusion*[1] will be welcomed by many. Before the war the transfusion of blood was rarely practised in this country, partly because there was no simple and reliable technique, and partly because serious consequences had been known to follow the operation. During the war the advantages of blood transfusion became so apparent that many new methods were introduced, but none of the earlier methods came into general use because they were too elaborate. Far more work had been done in America than in this country on this subject, so that when the American doctors arrived in the Expeditionary Force they brought information and experience of the utmost value. It was seen that the harmful results of some of the earlier transfusions were attributable to the neglect to ensure the compatibility of the blood of the donor with that of the recipient, and the dissemination of information on this point led to the systematic testing of the donor's blood on the basis of the work carried out by Jansky in 1907 and Moss in 1910. The simplified technique for this investigation which the Americans brought with them rendered it possible for it to be done as a matter of routine. But of greater importance still was the painstaking work of Oswald Robertson, to whom Geoffrey Keynes pays a fitting tribute when he writes, "to him a very large number of men indirectly owe their lives." Robertson's citrate method of indirect transfusion so simplified the whole procedure that blood transfusion was adopted almost universally in the army as the natural treatment for haemorrhage and shock, and during the last year of the war blood was even given under the primitive conditions existing in field ambulances and first-aid posts. Since the war the operation has been applied in the treatment of many of the haemorrhagic diseases with strikingly good results, whilst it is, of course, the recognized procedure of choice in cases of haemorrhage and shock met with in civilian surgical practice. The general public has become familiar with the idea, thanks to the sensational headlines frequently appearing in the press and the records of the "heroic sacrifices" of that seemingly ever-ready donor, the policeman!

There are two classes of medical men who will find the present book extremely useful. As is apt to happen with all new methods of treatment, blood transfusion has been credited with revitalizing power in all the diseases to which flesh is heir, but in this book the medical practitioner will find an account of the various conditions in which blood transfusion will do good and the indications for its administration. Those also who wish to learn a good way of giving blood will find here a satisfactory method of performing the transfusion, together with information as to the attendant dangers and instruction in the testing of the blood group of the donor.

The book commences with an historical review of the subject, in which are recorded many interesting experiments carried out in the seventeenth and eighteenth centuries, in some of which man was transfused with the blood of animals such as lambs. The various medical and surgical indications for transfusion are then presented, and in the following chapter the dangers of blood transfusion are related. A chapter is devoted to the physiology and pathology of the blood groups, and finally the different methods of direct and indirect transfusion are described. No account is given of the method of preserving blood and injecting the washed preserved red cells, a plan that was often of value in the war and which might sometimes find application under peace-time conditions.

The subject of blood transfusion has hitherto only been dealt with in the medical literature of this country by isolated communications concerning special points. The present book gives a clear account of the whole subject; it is well written and enlivened with many happy quotations, and by accounts of not a few entertaining incidents.

THE FUNCTION OF THE FRONTAL LOBES.

IN this book, the English version of which has recently appeared with the title, *The Mechanism of the Brain and the Function of the Frontal Lobes*,[2] Professor BIANCHI has produced a volume which cannot fail to interest neurologists and psychologists alike. From such a high authority much may be expected, and the reader will not be disappointed, for he will find here not only a full account of the author's own experimental and clinical work on the functions of the frontal lobes, with his conclusions, but in addition a detailed review of the whole subject from both the historical and evolutionary aspects.

Beginning with comparative anatomy and a general survey of the evolution of the nervous system from the lowest to the highest forms, the author leads us on to the more modern discoveries of the localization of function in the cerebral hemispheres, which are considered from the experimental, pathological, and clinical aspects. Flechsig's theories of "associative zones" are strongly criticized, and it is interesting further to note that the author evidently does not agree with Marie's views on the subject of aphasia, but adheres to the more classical opinions.

The second chapter is chiefly concerned with an historical survey of the different theories formulated as to the functions of the frontal lobes. The two next chapters are devoted to the anatomy and physiology of the frontal lobes in different species, and to a defence of the experimental method of investigation. Then follows a detailed account of the author's own experimental work, extending over many years. In the next chapter the effects of electrical stimulation of the frontal lobes are considered, especially in relation to movements of the head, eyes, and ears, and the author advances the hypothesis that such movements of the eyes and pupils are connected with the mechanism of attention. An important anatomical chapter on the associative paths between the frontal lobes and the sensory areas of the cerebral cortex follows; here the author's investigations with regard to paths between the cortex and the optic thalamus and corpus striatum will be followed with interest.

The last three chapters, dealing respectively with intelligence and language, the emotions and sentiments, and consciousness, are perhaps the most important and interesting in the whole book. Bianchi does not attempt to argue in detail the whole subject of aphasia, but contents himself with contrasting the aphasic patient with the patient suffering from disturbances of the functions of the frontal lobes. His opinions on the emotions and sentiments will be read with great interest, for they are not perhaps quite in harmony with the majority of current opinion. The book contains an immense mass of information; it is an admirable summary of the work of many years as well as an excellent presentation of the author's own views. A short explanatory foreword is provided by Professor Lloyd Morgan. In conclusion we must offer our warmest congratulations to the translator, Dr. J. H. Macdonald.

LETHARGIC ENCEPHALITIS.

FEW medical subjects in recent times have excited such widespread interest or produced such a flood of literature as lethargic or epidemic encephalitis; and it is fitting and opportune that our knowledge of it should be crystallized in the form of an extensive monograph by an acknowledged authority like Professor ACHARD of the Academy of Medicine of Paris.[3] The bibliography supplied at the end of this volume, extending as it does to fifty-five pages, is sufficient evidence of the immense number of contributions, both clinical and pathological, which this disease has provoked during the last four and a half years. We are presented in this volume with an admirable picture of this protean disease, especially rich in the descriptions of its many clinical shapes and symptoms. What we miss most is any considered report on its sequelae, though it must be admitted that this is naturally the most difficult aspect of the subject and one which later years may more easily produce. The careful following up of cases is at the present time the most fruitful field for clinical investigations.

After a short historical introduction there follows a long and interesting chapter on the symptomatology; in this the various disturbances of function which may occur are all separately described in considerable detail. We may perhaps be allowed to object to the statement that "the myoclonic forms are characterized by choreic movements," but apart from a few minor criticisms this chapter forms a most valuable feature of the book. It includes a full description of the various modifications which are found in the cerebrospinal fluid and their diagnostic significance. In the next

[1] *Blood Transfusion.* By Geoffrey Keynes, M.A., M.D.Cantab. Oxford Medical Publications. London: H. Frowde, and Hodder and Stoughton. (Demy 8vo, pp. 166; 13 figures. 8s. 6d. net.)

[2] *The Mechanism of the Brain and the Function of the Frontal Lobes.* By Professor Leonardo Bianchi. Authorized translation from the Italian by James H. Macdonald, M.B., Ch.B., F.R.F.P.S.Glasg. Foreword by Professor C. Lloyd Morgan, LL.D., D.Sc., F.R.S. Edinburgh: E. and S. Livingstone. 1922. (Roy. 8vo, pp. 348; 62 figures. 21s. net.)

[3] *L'Encéphalite Léthargique.* Par le Professeur Achard. Paris: J. B. Baillière et Fils. 1921. (Demy 8vo, pp. 324; 15 figures. Fr. 16.)

chapter the general clinical aspects and course of the disease are well illustrated by careful descriptions of actual cases. The fourth chapter is devoted to the morbid anatomy and histology, its value being enhanced by a section correlating the situation of the pathological changes with the clinical disturbances of function which are produced. Here perhaps more ground for criticisms will be found; thus, can we accept as proved the statement that "myoclonus appears to be explained by changes in the optic thalamus and cerebral peduncles," even when it is qualified by the admission that certain forms of myoclonus must be attributed to a spinal lesion?

The epidemiology and the numerous experimental researches on the nature and propagation of the virus receive somewhat scant consideration in view of the importance of this part of the subject. There is a long and interesting chapter devoted to an elaborate comparison of the symptoms with those of other diseases with which it may be confused, such as influenza, poliomyelitis, sleeping sickness, and many others, but since a separate chapter on diagnosis follows, some repetition is inevitably caused. The section on prognosis is disappointing, for it is especially in regard to the sequelae that more information is most urgently needed. In a short final chapter the various forms of treatment, including that by fixation abscess, are briefly discussed.

The value of this monograph lies chiefly in the careful and indeed admirable clinical pictures of the disease which it provides. It would have gained in interest by the provision of more and better illustrations.

THE VIENNA MEDICAL SCHOOL.

PROFESSOR MAX NEUBURGER in a pleasant monograph[4] has given what one may term an anecdotal history of the Vienna Medical School. There is a short introduction by the Professor, in which he very briefly outlines the history of the school. He alludes especially to the two periods in which Austrian medical science attained its chief distinction—the second half of the eighteenth century and the decades which more immediately followed 1850. With characteristic frankness he describes the intervening period as one of complete stagnation.

The main text of the book is composed of extracts derived from monographs previously published; for example, excellent pen pictures derived from Osiander's reminiscences are given of Johann Boer, Raphael Steidele, and Johann Peter Frank. Students of the history of Continental medicine will find much of interest and of humour in the accounts given. Boer, one of the most famous obstetricians of his time (1800), is painted as a cynic. He ate his food lying on his side because he claimed that so doing helped his digestion, and he showed an even greater appreciation of his own comfort when he gave up teaching because his students were so ungrateful. It is interesting to notice that nearly fifty years before Semmelweis's experiments Boer recommended the use of lime water and naphtha water as a vaginal douche and as a toilet for the examiner's hand.

One of the most interesting chapters deals with Austrian medicine and surgery in 1826, as recorded in Stromeyer's collection of stories of German doctors. There is a full account of the evolution of the teaching of pathological anatomy—a clinic which was founded under Skoda's supervision, and developed to the excellence it afterwards attained by the genius of Skoda's assistant, Rokitansky. The reader will naturally look for details of Semmelweis's life and work, but he will be disappointed; it would seem that even to-day the achievements of that great man have not received the credit which is their due.

The volume is interesting; it is written in an attractive style, and there are excellent portraits of the more famous leaders of Austrian medical science.

GADFLIES.

DR. WERNER MARCHAND[5] has performed a service to science by collecting all available information about the Tabanidae (gadflies, clegs, etc.) and publishing a very full summary of it, illustrated by reproductions of the figures from the works of all previous authors.

The Tabanidae are rather of veterinary than medical importance, though many species occasionally bite man, and two species of *Chrysops* are known to be carriers of the filarial worm *Loa loa* in West Africa. A number of diseases of animals, due to protozoa or worms, are carried by these insects, but do not now concern us. Our knowledge of the early stages and habits of the gadflies is relatively slight. It is also fragmentary and scattered over a large number of periodicals; it is therefore entirely inaccessible to the worker in the tropics who is seldom or never able to consult long series of the less important journals. Nevertheless, it may be noticed with surprise that the early stages of the Tabanidae of Central Africa and the Sudan and of the Philippines are better known, owing to the work of Neave and King and Mitzmain, than those of any part of Europe.

The Tabanidae are all of them large flies, and about two thousand species of the family are known; their distribution is very nearly worldwide. The females in the majority of the genera suck the blood of vertebrata, and are wide-ranging insects of powerful flight. It has even been recorded that certain species fly out to sea to suck the blood of turtles asleep on the surface of the Indian Ocean. The males haunt flowers, and are relatively rare in collections. The egg is laid on leaves of plants overhanging water. The young larva, when it emerges, drops to the surface of the water and swims ashore, to bury itself in mud. Most species spend their entire larval life in wet mud or wet sand at the margin of a pond or stream. Others are found in much drier situations, under turf. The larvae are carnivorous, and in captivity will eat earthworms and the maggots of smaller flies; if food is lacking they become cannibal. They are, for that reason, difficult to breed.

So far as we have been able to judge Dr. Marchand's work has been well done. It appears to be well arranged and to include all, or nearly all, available information. It has a fault common to all collations and summaries—that it does not contain enough of the opinions and personality of its writer.

NOTES ON BOOKS.

THE forty-first volume of the *Transactions of the Edinburgh Obstetrical Society*[6] comprises the proceedings of the society during the session 1920–21. The contents of the volume include Dr. William Fordyce's presidential address, in which he gives a review of the advances in gynaecology since the beginning of the nineteenth century, and an article by the late Dr. F. W. N. Haultain on his further experiences of "twilight sleep." Dr. Horace R. A. Philp writes on "Obstetric experiences amongst a primitive tribe"; Dr. David Shannon on "Pelvimetry as an index of treatment in contracted pelves"; Dr. W. Fordyce and Dr. R. W. Johnstone on "Concealed accidental haemorrhage associated with eclampsia"; Dr. F. J. Browne on "Stillbirth"; and Dr. Samuel J. Cameron on the "Surgical treatment of uterine prolapse." Dr. James Young describes an organism obtained from carcinomatous growths. The volume is well printed and illustrated.

The sixth edition of Mr. C. J. S. THOMPSON'S *Compendium of the Pharmacopoeias and Formularies*[7] brings up to date a little book which, within the limits set for it, is very useful indeed. It gives synopses of the pharmacopoeias of Britain (including the Indian and colonial addendum), the United States, Japan, France, Italy, Russia, and nearly all the other European countries, together with unofficial and useful formulae and practical aids to prescribing and dispensing. Notes are included on such subjects as medicated baths, the period of quarantine in infectious diseases, colour tests for alkaloids, bacteriological memoranda, and foreign terms and phrases used in prescriptions. An appendix, in addition to such subjects as modern antiseptic dressings for wounds and National Insurance stock mixtures, includes an epitome of the Dangerous Drugs Act, 1920, and a summary of its regulations applying to medical practitioners.

Mr. REGINALD BENNETT'S volume of *Medical and Pharmaceutical Latin*[8] is now in its third edition. It is intended to facilitate the acquirement of medical Latin by students

[4] *Die Wiener Medizinische Schule im Vormärz.* By Dr. M. Neuburger. Vienna and Berlin: Rikolay. (Demy 8vo, pp. 312; illustrated.)

[5] *The Early Stages of Tabanidae (Horse-Flies).* By Werner Marchand, Ph.D. New York: Published by the Rockefeller Institute for Medical Research. (Double roy. 16mo, pp. 205; 16 plates.)

[6] *The Transactions of the Edinburgh Obstetrical Society.* Vol. xli. Edinburgh: Oliver and Boyd. 1922. (Demy 8vo, pp. xxxvii + 148; illustrated.)

[7] *A Compendium of the Pharmacopoeias and Formularies.* By C. J. S. Thompson, M.B.E. Sixth edition. London: J. Bale, Sons, and Danielsson Ltd. 1922. (3½×6, pp. 398+24. 10s. net.)

[8] *Medical and Pharmaceutical Latin for Students of Medicine and Pharmacy.* By R. R. Bennett, B.Sc.Lond., F.I.C. With an introduction by H. G. Greenish, F.I.C., F.L.S. Third edition. London: J. and A. Churchill. 1922. (Cr. 8vo, pp. xlv+374. 10s. 6d. net.)

of medicine and pharmacy, and begins with a series of exercises in Latin grammar which, as the examples of the syntax are drawn from phrases commonly used in prescriptions, should be of service to those whose Latin is rusty. Latin-English and English-Latin medical vocabularies and examples of foreign prescriptions are provided, and the author gives a number of typical prescriptions, first in the ordinary abbreviated form, and then in the full Latin and English. The volume should familiarize the student with the correct reading and writing of prescriptions in Latin, which is eminently desirable in these days of well-advertised nostrums with names designed to catch the eye and be retained in the memory of the doctor equally with the man in the street. In the new edition the vocabularies have been revised and some of the sections rearranged in order to make the book more useful to the student.

A HALF-CENTURY OF PUBLIC HEALTH IN NORTH AMERICA.

BY

JOHN C. McVAIL, M.D., LL.D.

I.

THE fiftieth anniversary of the American Public Health Association has been made the occasion of issuing a Jubilee Historical Volume,[1] which opens up the whole subject of public health in America and will be of much value to sanitarians everywhere. The volume contains nineteen contributions, each by an author specially qualified for his task, and it is proposed in this series of articles to notice all the contributions.

ON LONGEVITY.

The founder and first President of the Association was Dr. Stephen Smith, and the first of the nineteen contributions to the Jubilee volume is also by a Dr. Stephen Smith. The question naturally occurs, Was this coincidence of names a mere matter of chance, or was the Stephen Smith, M.D., LL.D., of 1921 any relation—say, son or grandson or nephew—of the Stephen Smith who was president fifty years before? The reply is in the negative. The two men are not related—they are identical, one and the same individual. Next year, 1923, will be the centenary of Dr. Smith, the pioneer of American sanitation, and the warmest congratulations of his brethren in the old country go out to the Nestor of American public health and to the Association of which he is the honoured founder. It must have been very gratifying to the Association that Dr. Smith was able to be present at the Jubilee meeting. Fifty years ago the science of public health was in its infancy in America, and there was no selection of hoary-headed pundits to preside over the new body, so they made choice of an enthusiast in his prime, and time has proved their wisdom.

In his opening article Dr. Stephen Smith very naturally refers to longevity, but while resisting the temptation to profess that there is a secret, he confesses that he has a theory—that, indeed, he adopted the profession of medicine as a preventive of recurrent indigestion, with which he had been troubled; to this he attributes the activities of his middle life and the "comparatively comfortable age" to which he has attained. He also quotes Horace's reply to the same question—*Moderatus in rebus*—but he tells how a recent American authority explained his longevity by saying, "I keep my stomach and brain busy." This last rather agrees with the apocryphal story of the centenarian who, being pestered by the questionings of a food crank as to whether he had not exercised specialism in his diet, replied, "I consult my stomach no more about what I put into it than I consult my portmanteau; and if my insides get into trouble I just stick to my own business and leave them to fight it out among themselves." So much for the secret of longevity. As regards the science, Dr. Smith observes that Owen fixed the normal length of the life of an animal at five times the number of years required to perfect the bones; as in man twenty years are required to complete the process, his normal or potential life should be 100. Dr. Smith holds that this is the birthright of every child born fully developed—a most inspiring doctrine.

It is notably curious that the group of pioneers of the public health movement in England in the first half of the nineteenth century also, nearly all of them, lived to be old men. The age at death of Sir Edwin Chadwick was 90, of Sir Robert Rawlinson, the engineer, 88, of Dr. Neil Arnott 86, and of Sir John Simon 78. The least long-lived of the group were Dr. Farr, the father of the modern science of vital statistics, who died at the age of 76, and Dr. Southwood Smith, who died at 73. It is said that Farr was disappointed at not having been made Registrar-General when that office fell vacant before he gave up official work. Chadwick, however, lived so long that the Government conferred on him the honour of K.C.B. in 1889, when he was 89 or 90 years of age, and some five and thirty years after his public work had ceased.

EARLY HISTORY OF PUBLIC HEALTH IN NEW YORK.

Some account is next given by Dr. Smith of the sanitary conditions in New York City in 1860–70, in the days when "Boss Tweed" was in full control of the city government; it was to defeat his schemes that a Citizens' Association was formed. The first step was a sanitary inspection of the city, paid for by private contributions. Theoretically, one of the functions of the aldermen of New York at that time was to act as a Board of Health, but when a medical delegation waited on the then mayor with a view to getting the Board called together to take measures against approaching cholera, the mayor replied, "I shall not call the Board, for I consider it more dangerous to the city than cholera." At the same time there was a Health Commission for New York, but its duties were not well defined and its chief official, who was at the head of the street-cleaning department, "had an annual appropriation of nearly one million dollars to expend upon his political followers;" he did appoint some scores of Health Wardens, "who were generally saloon keepers." One of these, being asked how he acted when called to a case of contagious disease, replied that he went to the house and called the people into the street, where he gave his orders, which were to burn sulphur, but that he never himself went into the house.

Under these conditions the Citizens' Association in 1864 asked Dr. Smith and another member to prepare a Public Health bill; in so doing they were guided chiefly by the English sanitary laws, then the most complete in operation. Dr. Smith here strikes a note which is heard in various articles by various authors in the memorial volume—a willing tribute to English precedents and pioneers. That earlier action for the prevention of epidemic disease was taken in England was due to the fact that it was much more thickly populated than America, and its population much more crowded into urban areas, so that the conditions which made sanitation a public necessity prevailed in Britain before they had arisen in the New World. All the same, the frank and repeated acknowledgement of the debt which America owes Britain in this respect is very agreeable, though only what the generosity of American sanitarians had prepared us to expect.

The bill which the Citizens' Association promoted contained an unprecedented proposal—namely, that a health authority, having discovered a nuisance, should have power to secure its abatement without resort to the courts, which were completely under the control of Tweed, of whom at that time there was no hope of getting rid. The bill was defeated, but a campaign of education of the medical profession was begun, and, helped by the fear created in the public mind by threatened cholera, the bill was passed in 1866. In our own country, risk of epidemics has often been a valuable incentive to sanitary legislation, but the Americans were also wise in bringing the whole medical profession into the fighting line. This, it may be remarked, makes an excellent precedent for our own Government, which, before promulgating great health schemes, should always consult the organized representatives of medicine. Under the new law a Health Board was set up in New York; its active work for the prevention of cholera had excellent results, and during the past half-century the Health Department, though under the administration of officials of widely different political faiths, has steadily increased in popularity. "The great achievements of the Board," Dr. Smith says, "were the under-drainage of the soil, which prevented stagnant water and relieved the city of malaria; the removal of the cellar population to homes in the open air and sunlight; the removal of offensive industries from residential districts to the rivers; and the enforcement of rigid sanitary regulations." In the last section of his address Dr. Smith advocates the formation of an inter-

[1] *A Half-Century of Public Health.* Jubilee Historical Volume of the American Public Health Association. Edited by M. P. Ravenel, M.D. New York: American Public Health Association. (Sup. roy. 8vo, pp. 461. Cloth, 5.25 dols.; stiff paper covers, 3.75 dols.)

national public health league and concludes a charming article in the following words :

"May I be permitted reverently to suggest that our purpose is the same as was heard by the shepherds on the plains of Judea at the Nativity? Then the quotation 'Goodwill to men' was announced to be the salvation of the soul from sin by Divine appointment; while now we learn that salvation from the sins of the body must be effected by man himself, who created them. Let us apply ourselves to the task with renewed vigour, and thus enable those who will greet the centennial anniversary of this Association to hear from sanitary officials the good news that the death rate of the year 1971 is limited to those afflicted with old age, or to disease or accidents unpreventable and incurable by any agencies known to science."

THE STORY OF THE PUBLIC HEALTH ASSOCIATION.

The second article is the address delivered at the fiftieth anniversary celebration meeting by the president, Dr. Mazÿck P. Ravenel, Professor of Preventive Medicine in the University of Missouri, who has edited the volume. The subject is "The American Public Health Association—Past, Present, and Future"; and what may be called its text is a quotation from Osler:

"Of the altruistic instincts veneration is not the most highly developed at the present day; but I hold strongly with the statement that it is a sign of a dry age when the great men of the past are held in light esteem."

Emphasis is laid by Dr. Ravenel on the fortunate coincidence of the early days of the Association with the work of Pasteur and his followers—Lister, Koch, Loeffler, Sternberg, and others.

Before 1872 only three of the States of the Union had established a Board of Health, though many of the cities seem to have been more advanced, 134 of them having some health organization by the following year. It is rather surprising to read that down to 1872 only two States could claim to have approximately accurate records of births, deaths, and marriages. About American pioneers and progress much of historical value is recorded. In 1879 Congress created a National as distinguished from a State Board of Health, but four years later it was allowed to pass out of existence. The sphere of the Association's work was extended to Canada in 1884, to Mexico in 1889, and to the Republic of Cuba in 1902, so that practically the whole of North America is included, and the members now number 5,000. It is pointed out, however, that (just as in this country) specialization in particular directions is apt to result in the formation of new groups, to the loss of the parent body, though "the platform of the Association is, in length, breadth, and thickness, sufficient to accommodate all who are interested in human conservation." The Association's ambitions include the affiliation of State and county societies with the National parent organization, and that all should be kept in touch with each other through the medium of a great public health magazine.

The Association publishes a monthly journal (*The American Journal of Public Health*), and also a Monthly News Letter. It has for many years striven for the adoption of uniform practices and standard methods for the examination of milk, of air, and the pasteurization of milk, and for a Model Health Code for cities. The address, which concludes with biographical sketches of some twenty of the Presidents of the Association, affords convincing evidence that it has been and is doing admirable public health work in many directions.

CANADA.

The third contribution to the Jubilee volume—the story of public health in Canada—is by Dr. Peter H. Bryce of Ottawa, who has had a large official share in the public health government of the great Dominion. He tells how in the days of French colonization the sale of spirits to the Indians was prohibited, and how, after Britain took possession, a quarantine Act against plague and other such diseases was passed for Lower Canada in 1795; the penalty on the captain of a ship for neglect of quarantine was death, without the benefit of clergy. This was almost as Draconian as the ancient method in Aberdeen, where, as recorded by Dr. Charles Creighton, the magistrates in 1585 erected three gibbets, "ane at the mercat cross, ane other at the brig of Dee, and the third at the haven mouth, that in case ony infectit person arrive or repair by sea or land to this burgh, or in case ony indweller of this burgh receive, house, or harbour, or give meat or drink to the infectit person or persons, the man be hangit and the woman drownit." After recording the introduction of vaccination, Dr. Bryce goes on to say that so early as 1816 a board was formed for the examination and licensing of persons qualified for the practice of medicine. The year 1832 was notable for the establishment in Quebec of the first sanitary commission; a cholera ship arrived that year from Limerick and an extensive epidemic occurred both in Quebec and Montreal. So the story goes on, the dread of cholera being the main stimulus to sanitation; when the disease disappeared, action was diminished or discontinued, to be resumed when public alarm again called for special measures. The years 1832, 1849, 1854, and 1865 appear to have witnessed successive creations of boards for control of cholera. In 1867, when the various parts of Canada were combined into a single Dominion, the Canadian Medical Association was formed. As in the States, the comparative recency of official attention to vital statistics in Canada is striking. In the Province of Ontario it was only in 1869 that an Act "for the registration of births, marriages, and deaths" was passed, and it was not until 1882 that a Provincial Board of Health was established by the Ontario Government. About 7,000 deaths from small-pox occurred in the Province of Quebec in 1885, and naturally the epidemic stirred up appropriate preventive action.

Dr. Bryce is of opinion that on the whole the progress of public health in Canada has seemed slow, but the remarkable expansion of population since the beginning of the present century—the addition being 34 per cent. during the first ten years—has caused various new duties to be undertaken in relation to sanatoriums and other matters. So recently as 1919 a bill for establishing a Federal Department of Health was passed, providing that a physician shall be the deputy Minister of Health, and various existing services have been placed under the Department. Dr. Bryce concludes by referring to the effects of increasing urbanization of the population. He holds that "the complexity of modern life, and the great demands upon the emotional functions, have tended to produce a neurotic population. If, then, devotees of Hygeia are to find adequate responses to their prayers, their approach to her shrine must be through the temple sacred to Minerva."

BACTERIOLOGY.

Bacteriology inevitably occupies much space in the Jubilee volume. A long and valuable article is devoted to its history by Professor F. B. Gorham of Brown University, and it crops up in articles on State and municipal control of disease, water purification, milk, and medical entomology. The editor has wisely allowed each writer to tell his story in his own way, notwithstanding that it results in some overlapping and repetition.

Public Health Practice, Past and Present.

It is not proposed to follow Professor Gorham in his historical epitome from Athanasius Kircher to Leeuwenhoek and Ehrenberg, or from spontaneous generation to the germ theory and Pasteur and Lister and all the workers inspired by them. Faith in bacteriology is, indeed, amply justified. Its value is unquestioned and unquestionable; but it may occur to a reader, especially to the reader of the contribution by Professor Gorham and that of Professor C. V. Chapin on State and municipal control of disease, that there is risk of the enthusiasm of the laboratories and of appreciation of modern achievements in disease prevention leading to some narrowness of view as to the scope and value of the methods followed before the world had the benefit of present knowledge. In referring to the creation of boards of health in certain States in 1869–70 Professor Gorham says that "scavenging, sewers, and ventilation were the weapons depended upon to destroy the sources of contagion, then supposed to be filth, foul odours, and the decomposition and fermentation of animal and vegetable matter." Dr. Chapin tells, too, how Benjamin Rush believed that yellow fever and, indeed, most fevers were due to emanations from decomposing organic matter, and even imagined that a heap of decaying vegetables might cause an outbreak of malignant fever. The importance of contagion was forgotten, and the attention of sanitarians was almost entirely devoted to improving environment, these views being fostered by the theory and policy of English reformers.

There is no doubt that in the times of the English Board of Health—of Chadwick and Southwood Smith—and even later when Murchison wrote on continued fevers, the *de novo* origin of typhoid was accepted by some distinguished men, Murchison's conclusion being that though the disease once originated was communicable, it might be traced to "the emanations from decaying organic matter, or organic impurities in drinking water." This, however, was denied by Christison and John Hughes Bennett. Yet such beliefs,

though mistaken, tended to encourage cleanliness, and sanitary authorities were wisely inspired in making this their first line of defence, especially at a time when the public conscience had not awakened to the communal duty of providing hospitals sufficient for the segregation of ordinary infectious diseases—a provision which, in respect of scarlet fever and diphtheria, has after all not been as successful as was anticipated before the part played by "carriers" came to be realized. In course of time other discoveries will be made, and some parts of present procedure will no doubt be discarded for better measures. But if a new infectious disease were to become epidemic to-day, then, whilst bacteriologists were striving to unravel its mysteries in the laboratory, action by the health authorities would be for cleanliness and isolation. Speaking of the position half a century ago, Professor Gorham says: "This was the era of the filth theory of disease production, which continued for some thirty or forty years, and which is to-day just giving up its hold upon the health authorities of our cities and states." In the reviewer's opinion it will be unfortunate if, notwithstanding all the splendid discoveries of bacteriology, the filth theory is given up by health authorities. Outside the laboratories it is still the broad basis of health administration. Cleanliness of air, soil, and food constitutes the tripod on which sanitation should rest, and if that stool were kicked over there would be nothing so good to take its place. Dr. Chapin says that the physician and the nurse "have taken the place of the sanitary inspector and the police," but there is and will be abundant room for both classes of work, and the officers were not wasting time when they removed "dead cats and ashpiles." He is right regarding milk that "cleanly handling and prompt cooling mean few bacteria," also that cleanliness in the handling of food "is undoubtedly of real sanitary significance." For each infectious disease as it becomes understood special preventive measures are devised, and here bacteriology is invaluable; but behind and supporting it there remains cleanliness—personal, domestic, municipal, and national—making for the maintenance of general health, and good in its measure against every disease to which flesh is heir.

Science performed a great service in discovering that the infection of typhus, though the specific organism be unknown, is carried by lice. But bodily and domestic filth—dirt and foul air and darkness—are the conditions in which lice flourish, and if the insects are experimentally placed so that they can travel, on the one hand, towards clean air and light, and, on the other hand, towards foul air and darkness, the latter is the road they choose. Against typhoid fever cleanliness of milk and water remains a first line of defence, though the bacillus of the disease be recognizable by every medical student. Before the relation of rats to plague became known a great port in this country was invaded by that disease. Forthwith, in addition to hospital isolation of discovered cases, an anti-filth campaign was instituted and rigidly carried into effect. Besides house inspection, scavenging of streets and courts and premises of every kind, and removal of filth, whether vegetable or animal, wherever found, were included in the crusade. The disease did not spread, and we know now that these measures of filth removal and house purification, by operating against rodents and fleas, were of value against the spread of plague. Similarly house flies and other insects, which play so large a part in infection, are kept down by removal of the filth in which they breed, and, as agreed by Dr. Chapin, contamination of milk and other food is correspondingly lessened. Even the excessive attention paid to drain joints and traps, on the supposition that sewer gas conveyed infection, was not wholly lost. It is better that people indoors should breathe pure air than air polluted by drain emanations.

Not for a moment, however, is it suggested that the bacteriologists of the Jubilee volume give no credit to the work of the older generations of sanitarians. Indeed, they pointedly acknowledge it. As quoted with approval by Professor Gorham, Dr. Chapin says of the early promoters of public health that "their projects for civic betterment saved many lives and did much for human comfort and convenience," and Professor Gorham adds that "their mistakes were perfectly natural." But while it is right for the shoemaker to hold that there is nothing like leather, and for every worker to attach importance to his own speciality, a due sense of proportion is apt to be lost, and the administrative or executive sanitarian may express the hope that advances in bacteriology may never by their brilliant light so dazzle the eyes of public health authorities as to blind them to the importance of dirt in relation to disease.

In writing on immunity Professor Gorham notes the long gap between Jenner's discovery of vaccination in the latter part of the eighteenth century and Pasteur's work in the nineteenth. A discussion of Metchnikoff's theory of phagocytic immunity is followed by an account of the work on diphtheria and antitoxin by Loeffler, Roux, Yersin, Behring, and Kitasato. At the same time Nuttall, Büchner, Pfeiffer, and others entered on the study of blood serum in relation to immunity. Venereal diseases were being studied early in the present century. The agglutination studies by Widal and others were even earlier, and their application to the diagnosis of typhoid fever belongs to 1896. Serum sickness and anaphylaxis, opsonins and the opsonic index, are also briefly mentioned. In an eloquent passage, with which this notice of his essay on bacteriology may close, Professor Gorham says:

"Contagion is no longer feared as some intangible, unknown effluvium permeating the atmosphere against which we have no protection. Bacteriology has taught us that the communicable diseases are caused by specific micro-organisms which live and grow in the bodies of men and animals and plants; that when these disease-producing micro-organisms escape from their natural habitat they die more or less quickly; that the secretions and excretions coming rather directly from the bodies of the sick, and sometimes the well, are the real carriers of contagion. Bacteriology has taught us the parts played by the air, water, sewage, milk, and insects in the spread of disease, and has developed for us special methods of protection. Not only this, but bacteriology has taught us accurate methods of diagnosing disease, methods of specific immunization against disease, and, last but not least, methods of curing disease and saving lives by the use of vaccines, sera, and antitoxins. Could we but number the cases of disease prevented, the lives saved, by the adoption of these ideas in public health work we would know something of the debt which we owe to these indefatigable workers following in the footsteps of the illustrious Pasteur."

(To be continued.)

ROYAL MEDICAL BENEVOLENT FUND.

AT the meeting of the Committee held on April 11th, 28 cases were considered and £323 voted to 23 applicants. The following is a summary of some of the cases relieved:

Daughter, aged 47, of M.R.C.S.Eng. who died in February. Applicant is left quite unprovided for, as her late father was in receipt of a pension which died with him. She requires temporary assistance while looking round for something to do to earn a living; she hopes to retain the furniture in the hope of procuring a small house in order to let apartments. Voted £15.

Widow, aged 43, of M.D.Aberd. who died in March. Widow and four children at present unable to obtain any income owing to legal delays in realizing estate. The eldest son is dying of tuberculosis. Some three years ago the Fund gave £5 to the father owing to ill health. Voted £10.

Daughter, aged 70, of M.R.C.S.Eng. who died in 1862. Applicant has an annuity of £31 and receives help from friends, but has several bills to meet amounting to £32. She has previously received help from the Fund amounting to £48. Rent and rates amount to £18 per annum. Voted £25 towards paying off debts.

Surgeon, aged 77, who cannot secure an appointment, and has had to sell his belongings so that he and his wife could subsist. Only income, old-age pension, 10s. per week. The son is an invalid and unable to help. Rent amounts to 11s. per week. Voted £26.

Widow, aged 65, of M.R.C.S.Eng. who died in 1908. Applicant was left unprovided for, and earns a living as an office cleaner at £1 2s. 6d. a week, and works from 8 a.m. to 6 p.m.; her rent and insurance costs 4d. a week. Applicant is now suffering from "housemaid's knee" (septic). Voted £12 in twelve instalments.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters J. Symonds, K.B.E., C.B., F.R.C.S., at 11, Chandos Street, Cavendish Square, London, W.1. The Royal Medical Benevolent Fund Guild is overwhelmed, in these days of exorbitant prices for clothing and household necessaries, with applications for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles for the benefit of the widows and children who in happier times would not have needed assistance. The gifts should be sent to the Secretary of the Guild, 43, Bolsover Street, W.1.

THE thirty-first Congress of the French Association of Surgery will be held in Paris at the Faculty of Medicine on Monday, October 2nd, under the presidency of Professor Henri Hartmann, when the following subjects will be discussed: (1) Results of bone grafting, introduced by Cunéo of Paris, and Rouvillois of the army medical staff. (2) Remote results of operation on the large vessels, introduced by Leriche of Lyons and Paul Moore of Paris. (3) Technique and results of extirpation of tumours of the large intestine (excluding rectum), introduced by Abadie of Oran and Ockinczyc of Paris. Further information can be obtained from the General Secretary, Dr. J. L. Faure, 10, Rue de Seine, Paris.

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SATURDAY, MAY 20TH, 1922.

THE SEARCH FOR SPECIFIC REMEDIES.

IN the lay mind there dwells an instinctive belief in specific "cures" for disease, and, as Dr. H. H. Dale observed in his Friday evening discourse at the Royal Institution last week, the idea of finding for each disease a remedy specially adapted to its direct cure cannot be claimed as a development of the scientific era of medicine. On the contrary, the more primitive and unscientific the state of medicine in the past the more readily did its practitioners and their patients believe in such a possibility. One of the first results of the progress of medicine towards a place among the exact sciences was an attitude of general scepticism—often, indeed, well deserved—towards all the claims made for those drugs which earlier generations had, in simple faith, accepted as specifics. Nevertheless, the old empiricism stumbled upon some remedies which were definitely specific for certain forms of infection, and many will agree that modern science, with all its resources, has found no better remedies than some of these, nor perhaps even any quite as good. In the present century, however, a pronounced change has come over the picture, and we cannot do better than follow the broad strokes of the brush with which Dr. Dale laid in its chief features.

The first thing to note is that during the past twenty years or so the services of the synthetic chemist have been called in by the physician, and a serious attempt has been made to produce new substances having a direct curative effect in certain definite forms of infectious disease. The new impulse did not come directly from the study of those few traditional drugs which had succeeded in keeping their reputation as specific remedies; it came from an intensive study of the phenomena of immunity to infection. It was realized more fully and more clearly than ever before that Nature produced her own remedies for certain infections. Experiment and study showed that in the blood of the infected man or animal substances appeared which were adapted specifically to combine with and neutralize the poisons formed by the infecting organism, or to combine with constituents of the living protoplasm of the infecting organism, and so produce its disintegration, or impair its vitality, or render it susceptible to digestion by the wandering cells of the blood; it was in one of these ways that the progress of the disease was arrested, recovery from the immediate attack brought about, and resistance to further similar infection established. These "antibodies" (as they were uncouthly called) were found to be highly specific in two senses: they were indifferent to other kinds of infecting organisms or bacterial toxins, and, more important, they were harmless to the body itself. They were ideal therapeutic substances in the sense that they were intensely inimical to the infection and at the same time harmless for the infected person. The question then arose whether it would be possible to employ the growing resources of organic synthesis to construct artificial substances of known chemical composition which, like the natural antibody, would combine with the protoplasm of the infecting parasite in preference to the body cells of the host. Such remedies, it was hoped, would make effective intervention possible in those many forms of infection against which no curative antibody seems to be formed naturally. The quest might have seemed wellnigh hopeless, for almost nothing was known of the parasites concerned in these diseases; often they were only to be distinguished by their property of uniting with their particular antibody, about the chemistry of which we are still largely in the dark. Thus the problem was to prepare by chemical synthesis a compound which should have a specific affinity for one unknown substance rather than for another unknown substance, the only thing clear about both substances being their close similarity. This was an enterprise needing a courageous spirit as well as a fertile imagination, and we must recognize, with Dr. Dale, that both qualities were possessed by Paul Ehrlich. There are signs already that his very clear-cut chemical conceptions will not, in the form in which he put them forward, prove finally adequate; but his is the credit of a bold attack on the problem. The task Ehrlich set himself was to find for each type of infection a substance with a powerful chemical affinity (and therefore a strongly poisonous action) for a particular parasite, and at the same time with a relatively small chemical affinity (and therefore very little poisonous action) upon the organs and tissues of the patient.

Among the most recent curative substances obtained by this line of investigation is the new remedy produced by the German chemical firm of Bayer, and known as yet simply as "205." It would seem, as Dr. Dale pointed out, to be a remarkably curative agent in trypanosome infections. An advanced case of sleeping sickness in a man was sent from the Liverpool School of Tropical Medicine to be treated in Hamburg (because the drug was not allowed to be exported from Germany), and after two injections the patient was, within a few weeks, spending his convalescence in a walking tour in the Black Forest, and by all accounts has gone back to Africa a new man. A commission of German doctors, with the permission of the Colonial Office, has gone to Rhodesia to put the new remedy to a thorough test; the preparation has now been made available in this country, and is being tried at the London School of Tropical Medicine. The drawback to this promising remedy for human trypanosomiasis is that it has an energetic effect on the kidneys; it is too soon yet to say whether the damage is permanent, but there cannot be much doubt as to the choice between death from sleeping sickness and life with some renal impairment. The substance, it seems, is not a dye, like trypan-red and trypan-blue; when applied to the trypanosomes outside the body it does not appear to check their vitality, though the evidence on that point is incomplete. Dr. Dale suggested that when the constitution of this substance is revealed by the manufacturers it may provide the basis for a new conception of therapeutic processes, and perhaps the point of departure for progress towards yet greater success.

Dr. Dale dealt also with the organic compounds containing arsenic. It is, he thinks, clear that salvarsan does not by itself directly kill the spirochaete; the body of the patient must in some way co-operate. The success of arsenical compounds naturally suggested the trial of substances containing the closely related antimony, and the old familiar tartar emetic (tartrate of antimony and potassium) has proved to be a remedy in its province quite as specific as salvarsan. Dr. Christopherson in Egypt conceived the idea that if tartar emetic was of use in kala-azar (as it certainly is), there was no reason why it should not be tried in bilharziasis. He found that its introduction caused not only the death of the trematode worms in the veins of the bladder and bowel which caused the infection, but also the destruction of the eggs and their irritating and penetrating properties. With Dr. Leiper's work in the field of prevention and this method of cure, the complete extinction of this serious and disabling disease may, Dr. Dale thinks, be predicted.

Another method of treatment to be mentioned in illustration of the subject is the use of emetine. When amoebic dysentery became rife in the army during the war the knowledge then available suggested that the action of emetine as a cure for dysentery was the one clear example, among many to the contrary, of the direct killing of the parasite which caused the disease. When, however, Dr. Dale came to study the matter with Mr. Clifford Dobell, and particularly when amoebae were taken perfectly fresh and vigorous directly from dysenteric ulcers in the bowel, it was found that the chief alkaloids of ipecacuanha (of which emetine is one and cephaeline another) had a surprisingly weak action on the amoebae. Really vigorous amoebae could be kept crawling about for two hours in a solution of emetine hydrochloride as strong as 1 per cent. Certain artificial derivatives were then made, including methyl-emetine, dimethoxy-emetine, and iso-emetine; the second of these was found to be ten times as poisonous for the amoebae and not nearly as poisonous for the animal as the natural product, but it had no therapeutic effect whatever. This, therefore, was the surprising result: that the curative action of these alkaloids was proportional, not to their poisonous action directly on the amoebae, but to their poisonous action on the patient: the body of the patient must play an essential and perhaps a primary part in the killing of the parasite.

Such facts as these afford some idea of the complexities with which the investigation of remedies is beset. In the production of a curative effect the body of the patient in all these cases plays a part which is not yet fully apprehended. The nature of the co-operation between the remedial agent and the living tissues is hard to unravel. But work in this direction is an essential step towards a further theoretical basis for rational, orderly, and steady progress in therapeutic investigation. The importance of such advance for the future of mankind is incalculable.

THE HIPPOCRATIC OATH.

THE formula which goes by the name of the Hippocratic Oath has come down from the fourth century B.C., and appears to have been the promise given by those who were accepted as students of the medical art by the Asclepiad Guilds of Ancient Greece. Its authorship is generally attributed to the physician Hippocrates, who, to distinguish him from others of the same name, is often called "Hippocrates the Great," and who lived approximately from 460 to 380 B.C. Sprengel and others have, however, contended that it emanated from the medical school of Alexandria. Whether Hippocrates actually composed it or not, the oath was at all events associated with the venerable traditions of his name through the classic and mediaeval periods of medical history. Even the medical writers of the first century—for instance, Erotian, who lived at Rome in the reign of Nero, and Scribonius Largus, who accompanied the expedition of the Emperor Claudius to Britain in 43 A.D.—refer to it in terms of the highest respect, and attribute it to Hippocrates. Since their time it has formed the general guide in ethical matters for practitioners; and numerous variations, which plainly show their derivation, have been used by the older medical schools as the *sponsio academica* exacted from graduands at the time they received the right to practise medicine.

The oath, as translated by Francis Adams (1849), runs as follows: "I swear by Apollo the physician and Aesculapius, and Health, and All-heal, and all the gods and goddesses, that, according to my ability and judgement, I will keep this Oath and this stipulation—to reckon him who taught me this Art equally dear to me as my parents, to share my substance with him, and relieve his necessities if required; to look upon his offspring in the same footing as my own brothers, and to teach them this art, if they shall wish to learn it, without fee or stipulation; and that by precept, lecture, and every other mode of instruction, I will impart a knowledge of the Art to my own sons, and those of my teachers, and to disciples bound by a stipulation and oath according to the law of medicine, but to none others. I will follow that system of regimen which, according to my ability and judgement, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to any one if asked, nor suggest any such counsel; and in like manner I will not give to a woman a pessary to produce abortion. With purity and with holiness I will pass my life and practise my Art. I will not cut persons labouring under the stone, but will leave this to be done by men who are practitioners of this work. Into whatever houses I enter, I will go into them for the benefit of the sick, and will abstain from every voluntary act of mischief and corruption; and further, from the seduction of females or males, of freemen and slaves. Whatever, in connexion with my professional practice or not in connexion with it, I see or hear, in the life of men, which ought not to be spoken of abroad, I will not divulge, as reckoning that all such should be kept secret. While I continue to keep this Oath unviolated, may it be granted to me to enjoy life and the practice of the art, respected by all men in all times! But should I trespass and violate this Oath, may the reverse be my lot!"

Some of its provisions have, with the changing outlook and habits of modern times, become as obsolete as the invocation of Apollo and Asclepios with which it opens. Others, which inculcate generous and honourable conduct, remain as applicable to-day as they were in the age of Pericles. Among the latter, the provision regarding professional secrecy has been sometimes quoted recently, and is worthy of examination. It is evident that the deviser of this oath did not intend to lay upon his disciples an absolute prohibition against revealing things that they might see or hear in the course of practice. The words, which are translated "things which ought not to be spoken of abroad I will not divulge," clearly indicate a prohibition to the practitioner against making the affairs of his patients matters for idle gossip in the streets and market-place. There could have been no intention in the mind of Hippocrates to debar his followers from bringing professional matters into the law courts or otherwise revealing them for the public welfare. The meaning of this passage becomes even clearer in view of the fact that in several of the ancient MSS. of the Oath the word ἐκκαλέεσθαι (divulge) is replaced by the reading ἐκλαλέεσθαι (babble about).

It is interesting to consider to what extent the old tradition of a Hippocratic oath is preserved by the great medical schools of England, Scotland, and Ireland. The Universities of Oxford, Cambridge, London, Leeds, Belfast, and Dublin exact no declaration of this nature from those on whom they confer degrees. At Durham, Manchester, and Liverpool there is no declaration by medical graduands, but dental students give a promise not to advertise. At Birmingham the graduate undertakes to uphold the honour of the University; and those who obtain the Conjoint or Triple Qualification from the various Royal Colleges give a similar undertaking to their respective Colleges along with a general promise of honourable professional conduct.

In the four Scottish Universities only is the Hippocratic traditional formula preserved. At Aberdeen it is very briefly summarized by an Obligation, taken at

graduation, from which, however, the question of professional secrecy is omitted. At St. Andrews the formula closely follows the original Hippocratic oath, but, in the clause regarding secrecy, the wording runs: "Whatever during my attendance I may have seen or heard, *which it would be inexpedient to divulge*, I will keep silence regarding it." At Glasgow there is a declaration summarizing the oath, and the clause on secrecy runs: "I will keep silence as to anything I have seen or heard while visiting the sick *which it would be improper to divulge*." Edinburgh alone preserves still an old-time Latin formula by which the graduate promises that he will *not make public without due cause* matters that he may have seen or heard in practice.

It appears, therefore, that most of the universities and other licensing bodies of Great Britain and Ireland have long regarded the question of professional secrecy as a matter outside their concern, while in the few which still exact from the graduand a promise in regard to it the duty of secrecy may in any case be abrogated by expediency, propriety, or sufficient reason.

"JOURNAL OF SCIENTIFIC INSTRUMENTS."

THE methods which must nowadays be used by the scientific investigator are many and often very complicated. Even if his inquiries are limited to medicine and physiology he has very frequently to obtain the help of the chemist, the physicist, and the instrument maker. The designing of scientific instruments is both a science and a trade, and though wonderful things have been done in the past with very simple appliances, yet the need for an instrument of absolute precision is very often felt. It can only be met by the co-operation of the experimenter and the instrument maker, and both need trustworthy information as to what has been done by others. The field of research is so wide that few can keep up with the possibilities of new methods and instruments, and it is often difficult to obtain definite information as to their construction, capabilities and limitations. Sir Richard Glazebrook, when Director of the National Physical Laboratory, realized the growing importance of the subject to the well-being of science and industry, and issued a circular letter to many men of science, Government departments, societies, trade associations and firms, asking for opinions as to the desirability of founding a journal to deal with methods of measurement and with instruments. The answers were encouraging, and the subject was taken up by the Board of the Institute of Physics. As a result of a conference between the Advisory Council for Scientific and Industrial Research, the Institute of Physics, and the present Director of the National Physical Laboratory, it was resolved to prepare a preliminary number of a *Journal of Scientific Instruments*, and this is now before us. It opens with a note by Sir J. J. Thomson, President of the Institute of Physics and late President of the Royal Society. He observes that descriptions of instruments and methods of measurement are commonly given in journals devoted to particular branches of science, and that in such publications results are of primary importance, so that little space can be afforded to descriptions and detailed drawings of instruments. He goes on to point out that instrumental methods frequently proved to be valuable for research of quite a different character from that for which they were designed, and that therefore there is a need for a journal dealing with methods of measurement, and the theory, construction, and use of instruments. Among the papers contained in the preliminary number is one by Dr. A. V. Hill, professor of physiology in the University of Manchester, dealing with instruments and apparatus in relation to progress in physiology. In it he enumerates some of the physiological inquiries for which instruments of precision are necessary. The fineness to which measurements must be carried in some of the instances he gives is almost bewildering; for instance, he observes: "The nervous impulse in man travels some 100 metres per second, and the electric change (which is its only known physical accompaniment) occupies at any moment only some 5 cm. of the nerve. This electric wave, of an amplitude 0.01 to 0.02 volt, lasts therefore only some 0.0005 second at any point." His article is, indeed, largely concerned with electrical apparatus, but he also considers microscopical methods and speaks of the microscope as at present "a very imperfect tool in view of what physiology really requires of it." Nevertheless, he points out that Bayliss has been able to show, with the aid of intense dark-ground illumination, that the apparently clear pseudopodia of Amoeba are filled with numerous minute particles in Brownian movement, which movement can suddenly be stopped by electric stimulation. A further advance may, he hopes, follow the application to microscopical technique of such physical methods as the use of short ultra-violet light and higher magnification, the further development of instantaneous photography, or a more accurate knowledge of how far stains and fixatives produce artificial effects. Other articles, some of them from laboratories of manufacturing firms, are concerned with instruments used in astronomy, surveying, and flight. If this preliminary number elicits sufficient promises of support the new journal will be produced monthly by the Institute of Physics. The editorial staff will be provided by the National Physical Laboratory, and the editor will be assisted by a scientific advisory committee appointed by the Institute of Physics. It is recognized, however, that the help of biologists, engineers, chemists, and instrument makers, as well as physicists, will be necessary on this committee to ensure the proper consideration of apparatus used in the different branches of science. It is estimated that with a circulation of about 1,000 there will be a deficit of some £2,000 per annum, while a circulation of about 3,000 will render the journal self-supporting. If established, each issue will probably consist of 32 pages, and the price of each number will be 2s. 6d. Anyone desirous of obtaining a copy of the preliminary issue, which it has been possible to issue owing to a grant from the Advisory Council for Scientific and Industrial Research, may apply to the Secretary of the Institute of Physics, 10, Essex Street, London, W.C.2, enclosing 6d. to cover postage.

MEDICAL WOMEN'S FEDERATION.

AT the half-yearly meeting of the council of the Medical Women's Federation, held in London on May 8th and 9th, when Lady Barrett, the newly elected president, was in the chair, a long discussion took place on a report from a subcommittee on venereal diseases. A report was received also from a subcommittee on international relations, which had been appointed about a year ago in consequence of the great development of international health bodies in connexion with the League of Nations and otherwise. The subcommittee brought forward a scheme for an international organization of medical women on representative lines; this was approved by the council and will be brought before a conference of delegates from various countries, to be held next September at Geneva under the auspices of the American International Association of Medical Women. Reports from representatives of the Federation on outside bodies, including those relating to six committees of the British Medical Association, to the National Council for Combating Venereal Diseases, and to the College of Preceptors' Subcommittee on Physical Education of Girls, were received. In connexion with the report from the representative on the Insurance Acts Committee of the British Medical Association the following motion was passed: "The Council of the Medical Women's Federation is of opinion that the National Insurance Acts Committee should be strongly supported in their efforts to prevent the approved societies gaining control of the medical officers of the Insurance Acts." The Council also had under consideration several fresh instances of inequality of pay, or of status, between men and women doing the same work. This inequality still persists in the Post Office, in spite of repeated representations both from the Federation and the British Medical Association. Though the Postmaster-General has refused to receive a

deputation on the subject, the Council decided to make further effort to redress these inequalities and to uphold vigorously the principle of "equal pay for equal work"; it was resolved also to continue energetically the campaign carried on by a standing committee of the Council against the policy which would render married medical women ineligible for public appointments or lead to their dismissal merely on the ground that they were married. An official request from the League of Nations for the nomination by the Federation of a medical woman to be elected a member of the Health Committee of the League of Nations was complied with.

FOOT AND MOUTH DISEASE.

THE Ministry of Health has addressed a circular letter to local sanitary authorities with regard to a recent amendment of the Foot and Mouth Disease Order of the Ministry of Agriculture, which modifies the hitherto invariable practice of dealing with local outbreaks by the slaughter of all animals found to be suffering from the disease or to have been in contact with diseased animals. In future each case will be considered on its merits, and where local circumstances are specially favourable for securing isolation, or when pedigree herds of great value are concerned, the policy of keeping affected animals and contacts in strict isolation until their recovery may be considered. Where this new procedure is adopted the responsibility of ensuring that the milk from the diseased animals is not sold for human consumption will fall upon the sanitary authority. The amended order provides for notifying the medical officer of health of all outbreaks of foot and mouth disease amongst animals in his district and for informing him whenever it is proposed to deal with the diseased animals and contacts by isolation under the Dairies, Cowsheds, and Milkshops Order (1885). It will therefore be a practical point for him to determine at what stage of convalescence the milk can be regarded as innocuous. Many cases have been reported in which illness in man has followed direct or indirect infection from animals suffering from the disease; most of the cases have occurred in outbreaks following the consumption of milk from affected cows. Some of these outbreaks lack evidence of specificity, but in a certain number of them the symptoms described by different observers have presented a remarkably uniform clinical picture closely resembling the disease in animals. They include aphthae on the mouth, fingers, and toes, accompanied by pyrexia. The disease in man is usually described as running a mild course followed by recovery in a week or ten days. Three of the epidemics described by Siegel[1] in Germany and Austria, however, had a high fatality. In this country only a few outbreaks and isolated cases of a suspicious nature have been reported; none have been encountered in recent years, nor has any suspicious illness been reported in connexion with the present outbreak. The crucial experiment of successfully transmitting the disease from man to calf by inoculation has been reported on two occasions, by Schantyr[2] and by Bertarelli.[3] There can be little doubt, therefore, that foot and mouth disease can be transmitted to man. In view of these facts the question arises why the disease is not more commonly found in human beings, especially in connexion with such an extensive outbreak as that which has prevailed recently in this country. Innumerable opportunities for the infection of man must have occurred during this period, for, although the protection afforded by the Ministry of Agriculture's policy of slaughter must be considerable, there is evidence that the milk is infectious in the very early stages of the disease, and probably for some days before the appearance of the typical lesions. The complete immunity which our population seems to have experienced from any infection of the sort during this epidemic suggests very forcibly that the infectivity to man of the type of disease prevailing in Britain must be very low. In other parts of Europe also cases of supposed foot and mouth disease in man were very rarely reported down to 1872, but in that year the disease in cattle assumed a malignant form, and human cases came to be reported much more frequently about this time. On account of the marked variation in the virulence and certain other features of foot and mouth disease some authorities are inclined to regard it as comprising two separate entities. The form which has been observed of late years in this country, including the recent considerable outbreak, has been of the mild type, and this may account for the absence of human cases. Opportunities for estimating the mortality among cattle from this type of disease in England have not been afforded owing to the policy of slaughter hitherto enforced. In South America, however, where the disease is allowed to run its natural course, the mortality is much greater during those seasons of the year when fresh grass and green fodder are not available, and when the animal's food is restricted to hard and dry herbage, which leads to wasting and death from starvation owing to the lesions produced by the disease in the animal's mouth. In favourable seasons, on the other hand, comparatively few animals are lost as a result of foot and mouth disease. Reports of Continental outbreaks show a mortality varying from 2 to 50 per cent.

[1] *Zeit. f. klin. Med.*, 1897, p. 147.
[2] *Archia. Verrinarinch Naouk.*, 1893, p. 87.
[3] *Centralbl. f. Bakt.*, 1908, p. 628.

COLOUR VISION TESTS.

A MEDICAL man has written to us about the case of an officer in the mercantile marine who failed to pass the lantern test for a master's certificate, but who (our correspondent believes) is not colour blind. There is no doubt that in the past many candidates with normal vision have failed to pass the Board of Trade tests for colour perception, and also that others with dangerous errors of colour perception have qualified. It is important to remember that there are grades of colour perception, which vary from mere colour weakness to complete lack of colour appreciation. Some of these errors are of academic interest only. For example, a man who confuses green and blue may be quite safe both at sea and on the footplate, whereas one who has the slightest doubt between red, green, and white must be at once rejected. Again, a person with perfect colour perception may have shortening of the red end of the spectrum; such a man is unable to see a red light in circumstances when the red light is obvious to the normal-sighted. The theories of colour vision are many; they are confused, and it may be that all are wrong; but the practice is quite clear. If a man is shown a small red or green or white light and betrays the slightest difficulty in naming it he must be rejected; it does not matter what label is given to his error, he is dangerous. The exact type of colour blindness he is suffering from may be determined by other tests—by the flicker test, the Rayleigh equation test, or by one of the numerous pigment tests, such as Nagel's or Stilling's, but these are all subsidiary. The man has to distinguish between red, green, and white lights, and to do so under very adverse conditions. If in the quiet of the examiner's room he is shown a bright red light and calls it "white," or if he calls an adequate green light "red" or "white," he must be rejected. Again, if he names them all correctly and yet fails to perceive red covered with a neutral glass—a dim red light clearly visible to the examiner—then again he will be rejected. We can imagine nothing more logical or rational than a test of this type. By it the candidate is examined upon what he has to do in his daily work.

SCIENTIFIC SECTIONS AT THE GLASGOW ANNUAL MEETING.

THE officers of the Section of Dermatology at the forthcoming Annual Meeting of the British Medical Association in Glasgow have arranged the following provisional programme: On Wednesday, July 26th, there will be a discussion on "The etiology of seborrhoea and seborrhoeic dermatitis"; the opening paper will be given by Dr. Cranston Low, and the discussion will be introduced by Dr. Harold W. Barber. On July 27th Dr. W. J. O'Donovan will open a discussion on "Occupational dermatitis"; shorter papers will be read by

Dr. G. H. Lancashire on "Dermatitis artefacta," and by Professor J. Goodwin Tomkinson on "Alopecia areata and strabismus, a family group of cases." Clinical demonstrations will also be arranged for both days, probably at 9 a.m. The Section of Laryngology meets on Thursday, July 27th, and the officers have arranged as the subject for discussion, "Diseases of the oesophagus, their symptomatology and differential diagnosis"; the openers will be Dr. D. R. Paterson of Cardiff and Mr. W. G. Howarth of London. The officers of the Section of Diseases of Children have made the following preliminary arrangements: On July 26th there will be a joint discussion with the Section of Physiology on the "Etiology of rickets," opened by Dr. Leonard Findlay and Professor Mellanby. On July 27th a discussion on the "Treatment of tuberculous cervical glands" will be introduced by Mr. John Fraser. Clinical demonstrations will be held in the afternoons of both days at the Royal Hospital for Sick Children: on July 26th Mr. Alex. McLennan will give a demonstration there on scoliosis, and on the 27th Mr. Alexander Mitchell will show skiagrams of regeneration of bone in osteomyelitis. The Section of Radiology and Electrology will meet on two days, and the officers of the Section have arranged the following provisional programme: On July 26th, a discussion on "The *x*-ray treatment of deep-seated cancers, with special reference to Erlangen methods," to be opened by Dr. J. R. Riddell; a paper by Dr. J. A. Longley on "Comparison of coil and high-tension transformer in *x*-ray therapy," and a discussion on "The value of gas inflation in *x* ray diagnosis," to be opened by Dr. F. Hernaman-Johnson. On July 27th, papers by Dr. H. E. Gamlen, Dr. C. W. S. Saberton, Dr. James Crocket, Dr. E. W. Reed, and Dr. J. Gibson Graham. These papers will be followed by a discussion on "The therapeutic value of high-frequency currents and static electricity," to be opened by Dr. E. P. Cumberbatch, Dr. F. Howard Humphris, and Dr. W. F. Somerville. In the Section of Ophthalmology Dr. L. Webster Fox of Philadelphia will read a paper on "The clinical significance and treatment of heterophoria." The officers of the Section of Surgery announce that the full titles of all papers which it is proposed to read at the Annual Meeting should be intimated to the honorary secretaries of the Section before June 15th, when the full programme will be definitely arranged. The names of the officers of the nineteen Sections, with the programmes so far as these had been arranged, were published in the SUPPLEMENT of May 13th, at p. 173. The Sections will meet on Wednesday, Thursday, and Friday, July 26th, 27th, and 28th.

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE.

As already announced in these columns, the Third International Congress of the History of Medicine will be held in London this summer from July 17th to 22nd. The programme of the week's proceedings has now been drawn up and printed. The Congress will be opened by the Minister of Health at the house of the Royal Society of Medicine, 1, Wimpole Street, W.1, on Monday, July 17th, at 10.30 a.m., after which the delegates from foreign countries will be received, and the president, Dr. Singer, will give his address. In the afternoon the President of Honour, Sir Norman Moore, Bt., will give a reception and address at the Royal College of Physicians; in the evening there will be a reception and conversazione by Dr. and Mrs. Singer at the Royal Society of Medicine, and an address by Professor Elliot Smith. Morning sessions for papers and discussions will be held at 1, Wimpole Street—the headquarters of the Congress—on Tuesday, Wednesday, Thursday, and Friday, and afternoon sessions on Tuesday, Thursday, and Friday. Receptions will be given on Tuesday afternoon by the Lord Mayor and Lady Mayoress, at the Mansion House; on Tuesday evening by Sir James Purves Stewart and Lady Stewart, at 94, Harley Street; on Wednesday afternoon by the President of the Royal College of Surgeons of England, at the College; and on Thursday evening by Mr. and Mrs. H. J. Waring, at 37, Wimpole Street. On Wednesday afternoon visits to Barbers' Hall and Apothecaries' Hall have been arranged, and in the evening there will be a conversazione at the Wellcome Historical Medical Museum, where a special loan exhibition will be on view. On Friday afternoon Sir D'Arcy Power will give an historical address at St. Bartholomew's Hospital, and in the evening a banquet will be held at the Hotel Cecil. On Saturday Hampton Court Palace will be visited. Those wishing to become members of the Congress are asked to communicate as early as possible with the General Secretary, Dr. J. D. Rolleston (21, Alexandra Mansions, King's Road, S.W.3) or the Treasurer, Mr. W. G. Spencer, O.B.E., M.S. (2, Portland Place, W.1). Members desiring to read communications at the Congress should write to Dr. Rolleston before May 31st. The printed programme gives a list of hotels, with their tariffs, at which accommodation can be reserved if booked before July 1st.

TELEPHONES.

AMONG the changes in telephone charges and arrangements which are to come into force on July 1st are certain alterations described as "considerable concessions" which have been made with regard to the terms on which new exchanges will be opened in rural areas. The alterations, though not very generous, possess a certain interest for members of the medical profession practising in the country, and may eventually prove to be the most important of all the changes to be made if they can be taken as an indication that the Post Office is beginning to realize that its policy with regard to telephones in rural areas has been mistaken. Hitherto the difficulties put in the way of establishing new exchanges have been great and the cost excessive; the service, therefore, has not been good. A too costly system can, in fact, hardly be made a good one, since the more installations in any area the greater the effective value of the telephone system in that area. There should be at least one or two installations in every village. In respect to rural telephones this country is much behind some others, especially perhaps Switzerland Canada, and the United States; there installations in villages and country houses are the rule and not the exception. When the use of telephone installations is general the time of country doctors is saved and their efficiency thereby increased. The Postmaster-General admitted in the House of Commons that the present charges are prohibitive, amounting in a great number of cases to a rental of as much as £20 a year. That the rural public feel the need for telephones is shown by the fact that even under the old conditions 530 call offices were opened last year at provincial post offices, chiefly in rural districts, and 3,290 stations on rural lines. Under the new scheme it is announced that an exchange will in future be opened provided eight subscribers renting direct lines can be found, and providing the cost of the necessary junction circuit is not excessive; the installation rental will be £8 a year in addition to extra mileage. There will be a charge of £1 a furlong for any distance in excess of one mile from the new exchange. Where as many as fifteen subscribers can be found the installation rental is to be £7 10s. for business connexions and £6 for connexions to residences. Subscribers will be required to enter into an agreement for three or five years, according to the amount of the capital the Post Office finds it necessary to lay out in making the extension. As a rule service will be provided at these rural exchanges between 8 a.m. and 8 p.m. on week-days, and for a shorter period on Sundays. A continuous service is, however, contemplated when the necessary arrangements can be made, though at present an addition will be made to the installation rental to cover the cost. The Postmaster-General expressed the hope that the reductions now announced would result in a rapid extension of the rural telephone system; but if this expectation is to be realized facilities must be increased and rates diminished. Of the other alterations one of the chief is that the installation rental for a connexion to a residence where no business of any kind is carried on will be reduced by 30s. a year—to £7 in London, £6 10s. in Birmingham, Liverpool, Manchester,

and Glasgow, and £6 elsewhere. The charge for a local call will be reduced from 1½d. to 1¼d.; the charge for a call over a distance between five and seven and a half miles will remain as at present; but for calls over longer distances 2d. instead of 3d. will be added to the trunk charge. The charges for short-distance trunk calls have been reduced, and in future the local fee will not be charged on any trunk calls. The result will be that the charge for a three-minute call over distances up to thirty-five miles will be ½d. less than at present, and for calls over greater distances 1½d. less. At present calls between 7 p.m. and 7 a.m. are in most cases charged at half the full rates; in future the charges between 2 p.m. and 7 p.m. will also be reduced, the new charges being approximately 25 per cent. less than at present. Finally, the extra mileage charge will be reduced from £1 5s. to £1 a furlong, and a similar reduction will apply to external extensions and to private telephone wires.

VENEREAL DISEASE INQUIRY.

In our issue of April 22nd (p. 655) we published correspondence between Lord Dawson and the Minister of Health regarding the appointment of a committee to inquire into certain aspects of the problem of venereal disease with a view to an authoritative pronouncement on its medical and medico-administrative aspects. The committee was constituted as follows: Lord Trevethin, late Lord Chief Justice of England (Chairman), Mr. T. J. Tomlin, K.C. (Vice-Chairman), Mr. C. J. Bond, F.R.C.S., Surgeon Commander Reginald Bond, R.N., Dr. John Brownlee, Professor W. Bulloch, M.D., F.R.S., Dr. D. S. Davies, Professor G. Dreyer, M.D., F.R.S., Dr. F. E. Fremantle, M.P., Dr. Dorothy Hare, Professor H. R. Kenwood, M.D., Sir William Leishman, F.R.S., Dr. F. N. K. Menzies, Sir Frederick Mott, M.D., F.R.S., Dr. J. H. Sequeira, Dr. B. H. Spilsbury, and Mr. Kenneth Walker, F.R.C.S. The terms of reference are: "To consider and report upon the best medical measures for preventing venereal disease in the civil community having regard to administrative practicability, including cost." Lord Dawson in his letter to Sir Alfred Mond stated that he and the other members of the Committee of Selection, which had been formed to select the members of the Committee of Inquiry, were in complete agreement that after the latter committee has reported the community as a whole must decide how far its recommendations can be made the basis of policy and action. The first meeting of the Committee of Inquiry is being held at the close of this week at the Ministry of Health, and it is announced that Dr. Morna Rawlins and Wing-Commander Martin W. Flack, Director of Medical Research, R.A.F., have been added to its number.

THE ASSOCIATION OF CERTIFICATED BLIND MASSEURS.

We are informed that there are members of the Association of Certificated Blind Masseurs resident at the present time in Australia, New Zealand, Canada, and South Africa, and it may be of interest to readers there to be reminded of some facts with regard to the association. It is registered under the Board of Trade, its president is Sir Robert Jones, K.B.E., F.R.C.S., and its vice-presidents include many other distinguished members of the medical profession. Its members, who are for the most part soldiers blinded in the war, have been trained in massage, remedial gymnastics, and medical electricity at St. Dunstan's Hostel for Blinded Soldiers and at the National Institute for the Blind, London. The training extends over a period of two years, during which they receive both theoretical and practical instruction, the latter in the massage departments of various London hospitals. The school at which the students are trained possesses a series of models from the study of which the student can get an idea of the structure and position of the various organs, and special attention is given to surface anatomy. Further, a series of raised diagrams are available, illustrating such points as cerebral localization, and the various tracts of the spinal cord. There is also a library of massage literature in embossed type directed by a blind medical man who has been trained in massage. All the members of the association have passed the massage examination of the Chartered Society of Massage and Medical Gymnasts under exactly the same conditions as sighted candidates. We believe that the medical profession may thoroughly rely upon the competence of blind masseurs belonging to the association.

PROFESSOR OF PSYCHIATRY, SYDNEY.

Dr. John Macpherson, C.B., who has lately retired from the post of Commissioner of the Board of Control for Scotland, has been offered through the Agent-General of New South Wales, and has accepted for a period of three years, the post of Professor of Psychiatry in the University of Sydney. This chair is the first of its kind in any university in Australia. The university authorities were particularly anxious to appoint to this post a physician of authority and of experience, and it is a compliment to the Edinburgh school that they have selected one who is so closely connected with it. Dr. Macpherson for some years lectured on the subject of mental diseases at the Royal Colleges' School of Medicine. His clinical knowledge was acquired at the Royal Hospital at Morningside and at the Stirling District Asylum. Few have had such experience as he in administration. There is already a clinic on mental diseases in connexion with the hospital at Sydney, and it is anticipated that Professor Macpherson will bring the teaching and other arrangements abreast of the latest advances that have been made in the science and practice of psychiatry.

Sir StClair Thomson will give, on Wednesday, May 24th, at 5 p.m., the next lecture in the new series of post-graduate lectures arranged by the Fellowship of Medicine at the house of the Royal Society of Medicine, 1, Wimpole Street, W. The subject selected is, "The surgical anatomy of the nose and accessory sinuses." The lecture, which will be illustrated by a lantern demonstration, is open to members of the medical profession.

Sir Alfred Keogh, G.C.B., is retiring from the office of Rector of the Imperial College of Science and Technology, South Kensington, under the age rule, at the end of the summer term. He will be succeeded by Sir Thomas Holland, K.C.S.I., F.R.S., an old student of the College, who saw much service in India, and was Professor of Geology and Mineralogy at Manchester University from 1909 to 1918. Sir Alfred Keogh, although he has held the office for a good many years, was not able to discharge its duties with the completeness he and all friends of scientific education had hoped. As is well known, he was called back to act as Director-General of the Army Medical Service soon after the war began and was not relieved from his military duties until 1918.

Medical Notes in Parliament.

[From our Parliamentary Correspondent.]

Reduction of Service Establishments.

The Army Orders issued by the War Office on May 11th as to disposal of officers on reduction of the army establishment have interest for the Royal Army Medical Corps, because in so far as any reductions in medical personnel may be made the schedule will have application to the medical officers, if and when reductions are made, as well as to others. The list gives scales of compensation allowance and of gratuities for combatant officers.

Experiments on Animals.

Commander Kenworthy sought leave, on May 10th, "to introduce a bill to prevent the application of public money to vivisection experiments." He claimed that this was a practical attempt at economy. There was nothing in the measure to prevent vivisection experiments being continued at the hand of any learned societies or others who provided the money. His contention was that in these times it was not right that public money should be granted for this purpose, especially as part of it must come from persons who had scruples about vivisection. The sum was, he believed, substantial. Before the war the amount spent on medical research was approximately £60,000. It was now over £120,000, of which a considerable sum was spent on these experiments. He believed the figures to be round about £30,000 or £40,000.

Dr. Murray said this was really a flank attack upon experimental research. Commander Kenworthy would have been more frank if he had introduced the bill to abolish all experimental research. The principal argument he had used was that there were conscientious objectors and therefore they should not be taxed for work of this sort. But he had never brought in a bill to prevent money being wasted upon the navy or army because there were conscientious objectors who would be taxed, as they said, for the purposes of killing human beings. There were many reasons why public money should be provided for experimental research. Vivisection, as it was called, had been the means of advancing medical research within the last thirty or forty years to an extraordinary degree. Experiments upon animals had brought increased knowledge, and that had been of great use in the war, thousands of lives having been saved. In dealing with diphtheria, also, many lives had been saved by knowledge gained by experiments in connexion with antitoxin. Another of the more recent advances in medical science had been due to experimental research in connexion with the pituitary gland. In the department of obstetrics, moreover, they had been able, by knowledge gained from experiments, to save the lives of vast numbers of women and children. He could conceive of no object on which public money could be better spent.

On a division leave to introduce the bill was refused by 170 votes to 102.

School of Hygiene: Rockefeller Gift.

In answer to Mr. Myers and Mr. Naylor, on May 10th, Sir A. Mond said that the gift from the Rockefeller Foundation of two million dollars would be applied to the express purpose for which it was named in providing and equipping a school of hygiene. The Government grant would be applied to staffing and maintenance, as required by the Rockefeller Foundation as condition of their gift. The Foundation had recently acquired an admirable site for the purpose in Bloomsbury. The whole object of the scheme was to promote the hygiene and health of the people by providing facilities for the education of the medical practitioner and for research in preventive medicine. It would be an essential point in settling the organization of the school to secure that its work was made to fit in with the admirable work in this sphere now being done by existing institutions.

Import Duty on Drugs and Appliances.—On May 15th Mr. Baldwin said that the Board of Trade received, as far back as December 28th, notice of objection to the imposition of an import duty on synthetic camphor. The hearing opened on April 1st, but proceedings were delayed by the illness of the referee. He had no doubt that the decision would be given as soon as possible.—Lieut.-Colonel Guinness asked whether radium bromide was now subject to an importation duty under the Safeguarding of Industries Act; and, if so, whether the President of the Board of Trade would take steps to remit this duty in the case of all radium for therapeutic purposes. Mr. Baldwin said it was subject to such duty. He had no power to take the action suggested.—In an account of duties levied on a variety of articles under the Safeguarding of Industries Act, Mr. Hilton Young gave, on May 16th, the following amongst other figures to Dr. Murray: Scientific instruments and appliances (except electrical), dental, surgical, medical, and veterinary instruments, and appliances (except optical), £111; electro-medical, medical apparatus, *x*-ray tubes, *x*-ray apparatus, etc., £5,555.

Dentists under the Juries Bill.—On consideration of the Juries Bill as amended in Grand Committee, Captain Elliot, on May 9th, endeavoured to secure insertion of a subsection to require the registration officer to send a notice to any person whose name appeared in the current *Dentists' Register* if it was proposed to mark that person as a juror or special juror in any electors' list. Mr. Shortt resisted the proposal as unnecessary, holding that the present bill did not make the position of dentists worse than it was before. A dentist could, if he chose, be exempted from jury service. What he would have to do would be to look at the first list, and then if he was put down as a juror or special juror he could raise an objection, and from the time of such intimation by him onwards he would be exempted. Mr. Shortt admitted that dentists did not receive notice of being placed on lists, and Mr. Acland thought the position unsatisfactory. But the amendment was negatived.

Medical Boards in West Scotland.—Major Tryon, questioned by Mr. Duncan Graham on May 16th, said that the personnel of the Medical Boards in the West of Scotland was drawn from a panel of some 200 local practitioners who were employed on a sessional basis and were paid at the rate of £1 11s. 6d. for chairmen and £1 6s. 3d. for other members for each session of two hours. The boards were responsible to a small whole-time medical staff in charge of the arrangements for boarding and the provision of treatment in this area, and their duties were to assess the degree of disablement and to report generally on the medical aspect of the case.

Women Health Visitors: Salaries.—Sir A. Mond informed Mr. Galbraith, on May 10th, that he had made no general recommendation as to the salaries to be paid to health visitors, but in various particular cases he had taken action to secure such remuneration as would provide an efficient service.

Statistics of Pensions Hospitals.

In reply to a question on May 11th Mr. Macpherson stated that there are 52 hospitals wholly maintained by the Pensions Department, and that at these approximately 10,000 officers, nurses, and men are at present receiving in-patient treatment. The particulars are as follows:

Region.	Name of Hospital.	Pensioners under Treatment.	Where Situated.
Scotland ...	Bellahouston	643	Glasgow
	Belmont Castle ...	31	Forfar
	Craigend Park	48	Edinburgh
	Craigleigh	467	,,
	Dalhousie	15	Carnoustie
	Edenhall	97	Musselburgh
	Kilgraston	34	Perth
	Kings Croft	10	Barnton
Northern ...	Innes Hopkins	22	Ryton-on-Tyne
	Castle Leazes	455	Sunderland
	Shortley Bridge ...	202	Gateshead
	Gretna	98	Cumberland
	Sunderland	350	Sunderland
North-Western.	Allerton Towers (Officers)	26	Liverpool
	Grangethorpe	174	Manchester
	Knotty Ash	480	Liverpool
	Mossley Hill	354	,,
	Maghull	279	,,
Yorkshire ...	Becketts Park	457	Leeds
	The Hydro	88	Bridlington
	Oulton Hall	113	Leeds
	Radlyn College ...	67	Harrogate
	Wharncliffe	156	Sheffield
Wales	Bangor	73	Bangor
	Mount Pleasant ...	191	Chepstow
	Neath	174	Neath
	Rookwood	52	Llandaff
West Midland...	Highbury and Uffculme	245	Birmingham
	Cannock Chase... ...	429	Hednesford, Staffs
	Oaklands	30	Droitwich
	Sorrento	38	Birmingham
	Watsons Home... ...	25	Wylde Green, Birmingham
East Midland ...	Frith Home	59	Leicester
	Harrowby Camp ...	212	Grantham
	Victoria Park	190	Leicester
South-Western	Ashton Court	113	Bristol
	Bath	449	Bath
London	Holborn Red Cross ...	16	Roehampton
	Headington	151	Oxford
	Latchmere House (Officers)	52	Ham Common
	Lonsdale House ...	70	Clapham
	Ewell	337	Epsom
	Orpington	833	Kent
	Ruskin Park	303	Camberwell
	Rotherfield Court ...	38	Henley-on-Thames
	Shepherd's Bush ...	595	Shepherd's Bush
	The Spring, Hanwell (Nurses)	14	Hanwell
	Tooting	283	Tooting
	Welsh Hospital ...	161	Netley
Ulster	Portrush	42	Co. Antrim
South Ireland...	Leopardstown Park ...	61	Dublin
	Blackrock	467	,,
	Total	10,329	

Hospital Nurses' Training.—Captain Ainsworth asked, on May 11th, whether the Minister of Health, in considering the recent decision of the General Nursing Council for England and Wales, which recommended that no hospital be recognized as a training school for nurses unless possessing one hundred beds, would take into account the particular circumstance of each hospital before agreeing to any such rule. Mr. Parker (for Sir A. Mond) said that no rule had yet been submitted to the Minister, and until he had had an opportunity of considering its precise terms any statement would be premature.

Railway Vouchers for Medical Examinations.—Lord Eustace Percy asked, on May 16th, whether the Minister of Pensions was aware that dependants of soldiers who lost their lives in the war were often summoned to towns at a distance from their homes for medical examinations in connexion with their pensions; and whether, in view of the hardship upon many who could not afford the travelling expense, the Minister would issue free return railway vouchers to these dependants, as in the case of ex-service men attending medical boards, or allow examinations to be carried out by the Ministry's local medical referees. Major Tryon said that Mr. Macpherson was sympathetically considering this matter.

Small-pox in the Philippines.—Mr. Waterson asked, on May 15th, whether, in view of doubts as to the efficiency of vaccination raised by the outbreak of small-pox which occurred in the Philippine Islands in 1918-19, the Minister of Health would cause special inquiries to be made as to the circumstances attending the outbreak; and the reason why vaccination failed to protect the population. Sir A. Mond replied he had given Mr. Waterson all available data. He recognized they were not complete, but before considering the desirability of making further inquiry he proposed to await the official report for 1921.

Merchant Shipping (Venereal Disease) Bill.—This measure to amend the Merchant Shipping Acts 1894–1906, so far as they relate to venereal disease, was presented on May 15th by Major Colfox. It was backed by Dr. Raw, Dr. Elliot, Mr. N. Chamberlain, Mr Havelock Wilson, and Mr. Tillett. The bill was read a first time.

MEDICAL TERMS IN THE VERNACULAR AND IN DIALECTS.

II.

ANDICOMB, ANCOME, UNCOME, OR INCOME.

ADAM LITTLETON, in his *Latin Dictionary* (1678), gave andicomb as one of the meanings of the word *clavus:* "a corn in the finger or toe, or sole of the foot; a little swelling of hard flesh in the corner of the eye; also a whitlow or andicomb." Now since the angnail or agnail of a former article was found sometimes to be used as synonymous with whitlow one might at first sight regard andicomb as yet another vernacular term signifying an agnail. It is so, but only to the extent of being an additional name for whitlow. Andicomb itself, however, is quite an interesting medical term as used by the common people, and is worthy of separate consideration.

Sir James Murray, in the *New English Dictionary*, did not place andicomb among the A rubrics, and neither did Wright in the *English Dialect Dictionary;* but under *ancome* the former lexicographer gave "andicomb" as an eighteenth-century form of that word, and he said that the spellings *ancomb* and *andicomb* showed that the term was no longer understood. Even the word "ancome" he classified as obsolete or dialectal. So one is left with the unexplained emergence of "andicomb" in English in the later centuries and its rapid disappearance again, and one is tempted to conclude that it came from the dialects and returned to the dialects. It would be easy to find a plausible enough etymology for it; one might see in it a reminiscence of the ordinary meaning of hangnail and regard it as made up of hand and comb, with the suggestion of comb-like teeth or fleshy projections attached to the fingers of the hand. There is, however, nothing more dangerous than attractive pseudo-etymology; it will be in every way wiser to follow Sir James Murray in his conclusion that *andicomb* is simply another form of *ancome.*

Ancome, with its sixteenth and seventeenth century form "uncome," and its seventeenth-century "ancombe," is traced by Murray to the Northern English "on-come" (fourteenth century), meaning "visitation, access of disease." He admits that this is only a probability, and suggests as an alternative that it is a partially translated adaptation of the Norse word *ákoma*, which signifies "arrival, visitation, eruption of the skin." From this "on-come," with such a meaning, could be traced the sixteenth-century "uncome," and it would also be capable of being refashioned into the Scottish and North of England "income." This identification of "-come" with the idea of arrival, introduction from the outside, and so forth, is borne out by several of the quotations.

For instance, Sir Thomas Elyot, writing in 1538 (and it must be remembered that he had read medical works with "a worshipful physician," and that he wrote on medical subjects, thereby arousing some wrath on the part of the profession of his day), defined the word we are studying as "*adventitius morbus*, sycknes that cometh without our defaute, . . . of some men called an uncome." John Baret, too, the Cambridge lexicographer, who about 1574 published "An Alvearie" (a beehive!), "or Triple Dictionary in English, Latin, and French," gave the following definition: "a fellon, uncomme, or cattes haire; a bile or sore that riseth in mans bodie, *furunculus;*" and again, in another place, "an ancome, *adventitius morbus.*" Murray quotes also from an Act of Henry VIII (1544) the phrase "uncomes of hands, scaldings, burnings." One begins to see how the ideas of something coming in and a furunculus, felon, whitlow, boil, or the like are not irreconcilable; a sliver of wood or something else runs into the finger and so an ancome arrives, if one may speak so tautologically.

Philemon Holland—who, it will be remembered, was a "doctor of physicke" as well as a schoolmaster in Coventry—in his translation of Pliny's *Natural History* (1601) used the word "uncome" several times and always to render the Latin *furunculus* (boil), and he sometimes added "fellon" as a synonym. Thus in one passage he wrote, "also when we perceive a fellon or such like uncom sore a breeding, the first thing that we doe is to marke it three times with our fasting spittle"; and in another he stated about a certain ointment, "it is singular good for any uncome or fellon." Gerarde, also, in his *Herball* (1636), used uncome in meanings such as these given; thus, in writing of the arsmart or water pepper, he stated, "the same bruised and bound upon an impostume in the joints of the fingers (called among the vulgar sort a fellon or uncome) for the space of an houre, taketh away the paine." Gerarde was "Master in Chirurgerie" and so may be held qualified to speak on these matters.

Thus one reaches some of the modern definitions—for example, that of Wright (in the *English Dialect Dictionary*), "an ulcerous swelling," or that of Murray, "a boil; an imposthume; by some later writers applied to a whitlow." These agree, too, with the definition of the eighteenth-century lexicographer, John Kersey the younger, who gave "ancome, a kind of boil, sore, or foul swelling in the fleshy parts." Marston, in his comedy, *Eastward Ho*, published in 1605, actually gives the clinical history of the thing: "I have seen a little prick, no bigger than a pin's head, swell bigger and bigger till it has come to an ancome." How close one has come to agnail is shown by the fact that Hexham in his *Dictionary* defines the Dutch word *vijt* as "an Ancombe, or Sore upon one's finger"; and Köhler, in his *German Dictionary*, gives three English equivalents for *Nagelgeschwür*—namely, whitlow, agnail, felon. Bailey (1778) adds two characters to the ancome, "a swelling or bump, that is hard and hot"; but they were already implicit in the earlier definitions.

Jamieson, in his *Scottish Dictionary*, deals with the Northern corresponding term "income"; but his definition does not at first glance agree with the conclusions reached above, for he has "any bodily infirmity not apparently proceeding from an external cause," and he gives an illustrative quotation from Galt's *Sir A. Wylie:* "her wheel was nae langer of ony use to her, for she had got an income of her left arm, and couldna spin." There may be real agreement, however, for he explains that "the affection, as it were, came in, as not being caused by a sprain, a contusion, a fall, or anything of this nature." The cause was originally introduced from without—for example, from a splinter of wood—but the results were developed within; but it must be confessed Jamieson is not clear on this matter. Quotations from Scottish writers later than Jamieson suggest some disease of the knee or at least of a joint, and Wright states that in Caithness it is used with the meaning of "disease in a joint, usually knee or elbow, which causes it to be permanently bent"; but if this be the Caithness use then the Northumberland one is different, for there it signifies "an ulcer, something that has come in from an outside cause as distinguished from 'a gathering' caused by internal bad blood, which is called 'bred-venom.'" Yet, notwithstanding these uses, Wright has followed Jamieson in his definition, which is, "an internal disease, a bodily infirmity not due to accident or contagion, an ailment without apparent external cause, frequently an abscess, boil, or running sore." It is evident that "income," whilst it may sometimes correspond exactly with the Southern ancome and uncome, does not do so constantly. Possibly the new shade of meaning is due to the thoughts suggested by "in."

The relations of andicomb, ancome, uncome, and income having been traced both in the vernacular and in the dialects, it will be worth while to return to the Northern English word "on-come," with which Sir James Murray has connected them all. It does not appear to have been used in any of the specific senses that ancome, uncome, and income have acquired, but always with the general meaning of a calamity or a visitation or (in Scotland) an attack of disease. Thus, in the *Cursor Mundi*, that extraordinarily interesting rhyming Bible interspersed with legends of the saints and stories from the apocryphal gospels, which was written in Northumbria about the time when Bannockburn was being fought, the visitation of Pharaoh is predicted in these words: "And for that he wil noght me here, Hard oncome sal i send him sere." In one of the MSS. "hardenesses" appears instead of "on-come." In another place the author, in speaking of the plague of frogs, said: "the tother oncome atte him felle was froskis atte na tunge mote tel," and one of the MSS. reads "vengeaunce." In another passage "on-fall" is the word, and that is reminiscent of the Scottish "on-ding" (for example, of snow). It is evident, however, that "on-come" in these early days (fourteenth century) had the most general meaning, and it was only as time went on and the vowel changed into an-, un-, or in- that the special significations of boil, whitlow, fellon, disease introduced from without, and the like, came to be associated with it. This still leaves the mystery of *andicomb* unsolved, and, indeed, one suspects that forgotten dialectal uses would clear up more than one obscure point in the word's history. Meanwhile a rather curious fact emerges: in so recent a medical work as Allbutt's *System of Medicine* "oncome" appears with something very like its old meaning in such

a phrase as "the gradual oncome of chronic renal disease"; but it will not do for the doctor to pretend to know too much about "oncomes," for Sir Walter Scott (in *The Bride of Lammermoor*) assigned this wisdom to Ailsie Gourlay when he wrote, "This woman had acquired a considerable reputation . . . by the pretended cures which she performed, especially in *oncomes*, as the Scotch call them, or mysterious diseases which baffle the regular physician." J. W. B.

England and Wales.

CAMBRIDGE UNIVERSITY MEDICAL SOCIETY.

THE inaugural meeting of the Cambridge University Medical Society was held in the Anatomy School, Cambridge, on May 10th, the lecturer being Dr. W. Langdon Brown, physician to St. Bartholomew's Hospital, who took as his subject "The endocrine glands and their relationship to the sympathetic nervous system." The chair was taken by the president of the society, Mr. E. S. Fellowes-Farrow (Downing), who was supported by the vice-president, Mr. Norman F. C. Burgess (Caius), the honorary secretary, Mr. C. L. Owen (Trinity), and the honorary treasurer, Mr. T. F. McNair Scott (Caius). Introducing the lecturer, the president referred to the great work done by him in helping to bridge the gap between physiology and clinical medicine, and pointed out that it is one of the objects of the society (which is essentially for students) to correlate the work in the physiology and anatomy schools with the work at the bedside. He also took the opportunity of expressing the thanks of the society to the Right Hon. Sir Clifford Allbutt, K.C.B., F.R.S., Professor J. B. Bradbury, Professor F. G. Hopkins, F.R.S., Professor J. N. Langley, F.R.S., and Professor J. T. Wilson, F.R.S., for consenting to become honorary vice-presidents, and for giving the society so much encouragement and support. At the conclusion of Dr. Langdon Brown's lecture, which was greatly appreciated, Dr. W. L. H. Duckworth gave a short lecture on the operation of thyroidectomy.

Sir Clifford Allbutt, Regius Professor of Physic, moved a very cordial vote of thanks to the lecturers. The meeting, at which there was a crowded audience, should be an indication that the new society has before it a future full of success and usefulness.

UNIVERSITY OF LONDON REPORT.

The report of the work of the University of London during the year 1921–22 was presented by the Principal Officer, Sir E. Cooper Perry, M.D., at the graduation ceremonial of the University on May 4th. The total admissions by all channels during the year under review was 7,092, as compared with 3,852 in 1913–14, and 6,723 in 1920–21. The total number of candidates for all examinations was 27,237, as against 11,920 in 1913–14, and 23,563 in 1920–21. While the number of persons who sat for the matriculation and registration examinations was 6,638 in 1913–14, 15,539 in 1920–21, and 17,919 in 1921–22, and the number who sat for the preliminary and intermediate examinations was 3,327 in 1913–14, 6,039 in 1920–21, and 6,522 in 1921–22, yet the number of candidates for first degrees was only 1,636 in 1913–14, 1,522 in 1920–21, and 2,153 in 1921–22 respectively, and those for higher degrees only 171 in 1913–14, 224 in 1920–21, and 302 in 1921–22. The total number of successful candidates at all examinations last year was 9,481, and the number of those who attained degrees and diplomas 2,093, as compared with 8,034 and 1,440 respectively, in 1920–21. The standard of the examinations of London University is indicated by the fact that out of 27,237 candidates, 9,481 passed. It is curious to observe how many persons are apparently content to pass the matriculation and preliminary examinations without proceeding to graduation in either "first" or higher degrees. The roll of internal students now bears 8,758 names, as compared with 4,888 on the corresponding date in 1914, and 7,870 in 1921. The Treasury grant for the year to the University was £16,000, an increase of £8,000 on the figure for 1920–21. From correspondence that has passed between the Senate and the post-graduate medical committee appointed by the Ministry of Health, there appears (says Sir Cooper Perry) to be some prospect of the establishment in the near future, in close association with the University, of a medical school attached to a centrally situated hospital, and devoted solely to post-graduate medical education; and, further, of an Institute of State Medicine for instruction in public health, forensic medicine, industrial medicine, and medical ethics and economics. The Rockefeller Foundation has now offered to provide the sum of two million dollars for a school of hygiene, and has acquired a site for the school adjoining that presented by the Government for the new buildings of the University in Bloomsbury.

QUEEN CHARLOTTE'S HOSPITAL.

Lord Howard de Walden presided at the annual meeting of Queen Charlotte's Hospital held on May 9th. It was stated in the report that during the past year 1,729 patients had been treated in the hospital, 2,087 had been attended in their own homes, and there had been 4,603 patients at the ante-natal and child welfare departments. The financial position of the hospital was serious, and an earnest appeal was made for additional support. The report referred to the very large number of entries in the Midwifery Training School. During the year 58 medical students and 47 qualified practitioners attended a course of practical midwifery, and 164 women were trained in midwifery and maternity nursing. Students were received from nearly all the London medical schools and from most of the provincial and Scottish schools.

THE LIVERPOOL MATERNITY HOSPITAL.

At the annual meeting of the Liverpool Maternity Hospital on May 9th the same story of lack of funds interfering gravely with the usefulness of this charity was heard as had been heard at the corresponding meetings of other hospitals in Liverpool. The hospital, it was reported, had been continuously full during the past year, and no fewer than 179 women had been refused admission owing to lack of accommodation. A new hospital had been projected shortly before the war, and there was urgent need of a modern and fully equipped institution capable of meeting the demands of the city. The continued high cost of building had alone prevented execution of the project. The need for better training of medical students and midwives was emphasized by Dr. Musson, who referred to the high death rate in women in childbirth, and said that venereal disease and unskilful midwifery were responsible to a large extent. The financial situation was grave. There was a deficiency of £2,052 during the past year, and the debit balance was now £5,355. Unless new sources of revenue were found the work of the hospital would have to be curtailed. It was suggested that if nevertheless the new hospital were begun, an awakened sense of the obligations of the citizens of Liverpool would become at once apparent in a large accession of new subscribers. Reference was made to the success that had crowned the efforts of those responsible for the hospitals in Glasgow and Leicester; small subscriptions were made weekly by all employees, and it was pointed out that one penny out of every pound earned would bring in a splendid income for the hospitals, and thus relieve the committees of the various institutions so essential to the health of the city from their present clamant financial distress.

A SCHOOL MEDICAL OFFICER'S SALARY.

At a meeting of the Worcester Education Committee last week a letter was received from Dr. Marion Andrews, school medical officer, stating that as the city council had made a deduction from her salary of £500 per annum, which was the minimum sum she could accept under the rules of the British Medical Association, she had regretfully to resign. It was stated that a subcommittee had passed a resolution regretting the necessity for the resignation and expressing a hope that the council would not persist in the reduction. This reduction was made in pursuance of a general reduction in officials' salaries of 10 per cent., and the council gave instructions that any official who did not accept the reduction should be asked to resign. Dr. Andrews pointed out in her letter that the position was now worth £750 if she had not refrained from asking for advances because of the general financial stringency. Dr. E. H. Corder, a member of the committee, said that the rule as to the £500 minimum was made during the war. General practitioners were now being asked to reduce their fees, both panel and private, and he suggested that perhaps the minimum would now be modified. Mr. W. Sharpe said that the matter had been before the finance committee and they had had their attention called to the facts which Dr. Corder had mentioned, and the committee had decided to write to the British Medical Association asking if some reduction of the minimum was acceptable.

New South Wales.

TUBERCULOSIS.

THE ninth annual report of the National Association for the Prevention and Cure of Tuberculosis states that there has been a considerable increase in the number of patients attending the dispensary, and that there is urgent need for the establishment of branch dispensaries in some of the more densely populated suburbs. In Balmain, an important industrial centre, the local hospital has handed over to the association a cottage suitable for the purpose of a branch dispensary. The number of new patients admitted to the dispensary from January 6th to December 31st, 1921, was 337; the number of males and females was about equal. Fifty-seven old patients had attended during the year, and the total number of patients now under treatment was 130. The number under 14 years of age was large (130). Patients visited in their own homes numbered 430. In moving the adoption of the report the Lord Mayor stated that though tuberculosis was sixth on the list of all causes of death in Australia, its incidence was sufficiently serious to make its prevention and cure one of the most important problems awaiting solution by medical science. In Australia the death rate was 0.68 per 1,000, less than half that of the United Kingdom and the United States, where nearly half the deaths between 25 and 35 are caused by phthisis. He advocated the establishment of a tuberculosis bureau in Sydney presided over by a special officer, with one channel of admission to all institutions; this procedure, he believed, would make for efficiency in administrative control.

THE SYDNEY TECHNICAL COLLEGE.

A valuable addition to the facilities for technical education in Sydney has recently been made in the conversion of the old gaol at Darlinghurst into a technical college for the eastern suburbs of Sydney. The Minister of Education has now decided to add a course of lectures on industrial hygiene, welfare work, and health visiting to the courses of lectures on health already given at the college. A number of factories and larger retail establishments in Sydney already have on their staffs officers who are concerned with the health of the employees, and it is believed that an extension of similar provision to other places of business will soon be effected. The new course of lectures will be given by Dr. J. S. Purdy, metropolitan medical officer of health, and will be designed specially for the training of welfare officers.

THE MILK SUPPLY.

Dr. Purdy, in giving evidence during an inquiry into the milk industry instituted recently by the Board of Trade, suggested that those engaged in the trade should seize the opportunity of getting together to wipe out the present unnecessary competition and to solve the problem of giving the public reasonably pure milk at a reasonable price. If this were not done soon the public would probably insist on either the Government or the municipalities stepping in and forcing the position, as improvement was essential. Dr. Harrison, of the Renwick Hospital for Infants, said that the present milk supply of Sydney, if some obvious improvements were made, would be good enough for general household purposes, but the price was too high; the cost of distribution involved an increase in price of 150 per cent. The retail price should be brought down to 6d. a quart. Special certified pure milk for those whose lives to a great extent depended upon it would necessarily be more costly. He suggested, further, that the Government might establish a model dairy in a suitable district to supply the baby clinics at first only as a demonstration. When a practical working basis had been found other dairymen of moderate views and efficient training would probably join and make it pay by co-operative effort; competition might be fostered by score cards and prizes for best results as in poultry raising. Dr. Dick, the senior medical officer of the Department of Public Health, expressed the opinion that the present system of price fixing did away with competition, and in the case of milk was likely to lead to a tendency on the part of dairymen to slacken their efforts to produce a better quality of milk. Under the present system the public had to pay the same price for what might be poor or dirty milk as for the first-class article produced under hygienic conditions. If price fixing must be continued then a high standard should be insisted upon. Further evidence has been taken, but the inquiry is not yet concluded.

BUBONIC PLAGUE IN SYDNEY.

The present outbreak of plague in Sydney has so far been confined to a few sporadic cases. Recently, however, two new cases have been notified from a new district, and in both the infection was traced to the same source. Both were severe cases, and one of the patients has died. Dr. W. G. Armstrong has been most insistent in impressing on the public the urgent necessity for putting forth every possible effort for the destruction of rats and fleas. The unseasonably warm weather of the last few weeks has tended to increase the danger of an extension of the outbreak.

THE EDITH CAVELL MEMORIAL FUND.

A rest home for nurses has been established in one of the suburbs of Sydney as a memorial to the late Nurse Edith Cavell. At the annual meeting of the fund it was stated that the past year had seen the objective of the fund realized—the raising of an endowment fund of £20,000 and the establishment of Cavell House. The honorary treasurer stated that the accumulated fund now amounted to £20,183, the expenditure during the year amounted to £1,219, and the income to £1,276. As the expenditure included a sum of £536 for furnishing and repairs of the building which had been given, the institution would be able to carry on without making any appeal to the public for financial assistance. The report concluded by an expression of the gratification felt by everyone connected with this movement that the long-worked-for goal has been reached at last, that Cavell House is now placed on a firm financial footing, and that it will continue to serve its double purpose of perpetuating the memory of Edith Cavell and of benefiting members of her noble calling.

India.

MEDICAL EDUCATION IN INDIA.

DR. NORMAN WALKER, during his tour in India at the instance of the Secretary of State for India for the purpose of examining the state of midwifery training in that country, was entertained to dinner at the Orient Club, Bombay, on March 10th, on the invitation of Sir Temulji Nariman and Dr. M. V. Mehta, who were appointed by the Government to assist Dr. Walker in his visit of inspection in Bombay. Sir Temulji Nariman, in proposing the health of the guest, said that they had invited him that evening to hear some of his experience in India of the state of medical education in general and of midwifery practice in particular. As one who had already reached his jubilee in the medical profession and had attended more than 25,000 maternity cases, he could say that midwifery practice was as skilled and efficient in Bombay as in any other city of the world. He appealed to his Indian friends not to complain and bring in the plea of the prejudices and customs and habits of the Indian people, but to fight hard against those prejudices and break them. Dr. Norman Walker, in responding to the toast, said that when he landed in Bombay five weeks previously the situation bristled with misunderstandings, and it was his first duty to clear them away. In a series of meetings throughout India he had explained the position, and he was happy to think that most people now regarded him as a candid friend. He had seen much to admire in India, and a good deal that could be improved regarding medical education. India had something to learn from the remarkable development of medical education in the United States. About thirty-two years ago, when he visited that country, American medical education was regarded with something like contempt in Europe, but now there was a great change; there were ninety medical schools, and of these seventy were classed "A," and sixty or so thoroughly deserved it. There were several factors which had caused this, and one was the prevailing desire to improve everything, while another potent influence was the founding of the Johns Hopkins medical school, which demanded quality, not quantity, in its students. Nearly all universities to-day had too many students, the Bombay University among them; to put it otherwise, there was either not large enough accommodation, or else too few teachers. On the question of supply some solution must be found. India, like many other countries, was poor, but every country had many enormously rich men who could not find a better investment than in the founding of medical colleges and laboratories. It was useless to appeal to the State in any country. A medical register was a necessity in

every civilized country; the door of admission must be narrow, and those only should be admitted who in the opinion of the Council in charge of registration were up to the standard. The larger the area the Council covered the easier it was for it to set up a high standard. He suggested that the question of an All-India Medical Council should be considered, composed of representatives of the provincial Councils, to discuss all problems of medical education. He further suggested an interchange of examiners between the different universities for the purpose of raising and standardizing the qualifications of all.

EMANCIPATION OF INDIAN WOMEN.

The Indian woman is coming out from behind the *purdah* and engaging in philanthropic enterprises of various kinds. Recently at Nagpur one Indian lady provided a house rent free and two other Indian ladies made house-to-house visitations with a collecting list and raised enough money to equip a maternity home and the promise of subscriptions sufficient to keep it up. One lady acted as housekeeper, an Indian woman doctor gave her services free, so that a very simple but efficient little nursing home was started, which already is being taken advantage of by the poor, and, except for menial servants, is entirely managed by voluntary effort. This is an example of what Indian ladies can do and the public spirit they are now showing.

ST. JOHN AMBULANCE AND CHILD WELFARE.

Lady Reading, speaking recently at Delhi, paid a glowing tribute to the work of the centres in reference to maternity and child welfare which she had seen in Calcutta under the auspices of the St. John Ambulance Association. Centres exist in different parts of the city for Indian and Anglo-Indian women and children. Many mothers attend daily; they are instructed in the simple rules of mothercraft, their babies are weighed weekly, and any deviation from health is at once noticed. A medical woman attends twice a week for giving advice, and many cases are followed up by a visit to the home, so enabling the visitor and doctor to keep more in touch with the actual conditions under which the mother and child are living.

Correspondence.

BOVINE ACHONDROPLASIA.

SIR,—In a note on "Bovine achondroplasia" in the BRITISH MEDICAL JOURNAL of May 6th, 1922, Dr. F. A. E. Crew asks if scattered areas of cartilage have been found in the adrenals of human achondroplasts such as he has met with in the monstrous calves born of Dexter cows.

The adrenals in a full-term human achondroplastic foetus examined by us were normal in shape and weight, and serial sections of both glands revealed no histological abnormality. In a survey of the rather considerable and scattered literature of this condition as it occurs in man we have found, so far, no record of abnormal changes in the adrenals, though it seems that these organs have rarely been examined histologically. MacCallum (*Johns Hopkins Hosp. Bull.*, 1915, xxvi, 182) says that the adrenals were normal in a female achondroplast 75 years old, and also in a 7 months' foetus. G. Marum (*Frankfurt. Zeit. f. Path.*, 1921, xxiv, 663) likewise could find no changes in an adult female achondroplast.

The impression is that the adrenals are intact in human achondroplasia.—We are, etc.,

A. F. BERNARD SHAW,
W. E. M. WARDILL.

Pathological Department, College of Medicine, Newcastle-upon-Tyne, May 15th.

EXCISION OF THE HEAD OF THE FEMUR IN ARTHRITIS DEFORMANS.

SIR,—I do not find it easy to reply briefly to Mr. Blundell Bankart, chiefly because there is little to disagree with in his criticisms. There are, however, several points of difference between us which demand a fuller explanation on my part of the rationale of the criticized operation.

The operation as described in my paper has been evolved with simple excision of the femoral head as its basis. I prefer therefore to retain this title, which to my mind is not illogical. It is true that certain of the technical procedures included are employed in full arthroplasty; these are the remodelling of the stump of the neck and the application of bone wax. I do not agree with Mr. Bankart that (*a*) the free exposure of the hip by an antero-external flap and (*b*) the separation of the great trochanter are features peculiar to arthroplasty of the hip. They are simply steps in the adequate exposure of the hip-joint for any purpose, whether this be simple excision of the hip—as advocated by Mr. Bankart—or the more elaborated excision which is dealt with in my communication. With regard to the question of excision of the capsule, I consider it is essential to cut away a considerable amount, not with the idea of determining the future function, but again to facilitate complete exposure of the deformed head previous to its removal. I think my paper made clear that a severe operation can be used only in carefully selected patients, and from practical experience I do not consider the elaborated excision operation to be unreasonably severe.

Simple "straightforward excision" of the femoral head—in the restricted sense of the term—is not an obsolete operation, provided the after-treatment is correct. I have done it in a number of cases of osteo-arthritis, but I do not consider the classical anterior route is efficient; the exposure is too limited unless the head of the femur is disarticulated, a manœuvre which I feel should be avoided in these patients. Using the postero-lateral route, the operation can be carried out with a full view, and the head removed quickly and with ease. There is one type of case in which it is especially important to do a "radical" excision of the head, and that is when the opposite hip-joint shows early hypertrophic changes with slight limitation of mobility. Again, in unilateral cases, when the changes are very advanced, the large mushroomed head, when removed as conservatively as possible, leaves a neck which is exceedingly short. It will thus be seen that the expression "excision of the femoral head" is capable of varying degrees of interpretation.

The term "arthroplasty" should be limited to an operation performed in the presence of complete ankylosis of a joint and for nothing else. I have no intention of allowing myself to be responsible for the suggestion that, as applied to the hip-joint, "arthroplasty" and "excision of the head of the femur" are synonymous terms.—I am, etc.,

Manchester, May 9th. HARRY PLATT.

BONE GRAFTING FOR UNUNITED FRACTURES.

SIR,—Professor Rushton Parker draws attention in your correspondence columns of May 6th to a method of treating ununited fractures by bone grafting which he first described in 1907.

The omission of any reference to this method in the paper read by Mr. Perkins and myself is perhaps excused by the full title of our contribution—namely, "Some observations on bone grafting with special reference to bridge grafts."[1] I think that it is now common ground among those who have had recent experience of this subject, that a definite gap in a long bone cannot be successfully bridged except by the insertion of a graft which makes firm contact with both fragments.

The fifty cases upon which we based our observations were nearly all the result of missile injuries which had caused considerable loss of bone substance; scarring both of the bone-end and surrounding tissues as the result of prolonged suppuration was also present in the majority. Such a condition of affairs involves a complete loss of bone-forming tissue in the gap, and it is only by careful attention to the technique of the grafting operation that success can be obtained with any regularity. In my experience the loose interposition of bone fragments or bone dust in this class of case is practically useless.

The cases quoted by Professor Parker and illustrated in the *Proceedings of the Royal Society of Medicine* are of simple fractures, one of six months' and the other of nine months' duration; the *x* rays show no bone gap and do not even suggest the presence of a pseudarthrosis. I think it is clear that examples of this nature form no basis upon which to determine the proper method for replacing bone when there has been a definite loss of all bone-forming elements at the seat of injury.

I no not question the efficiency of Professor Parker's method in simple cases, but I feel that it is important to emphasize the necessity, brought home by recent intensive experience, of the firm fixation of the bone implant in the case of bridge grafts.—I am, etc.,

London, W., May 12th. C. MAX PAGE.

[1] *Brit. Journ. of Surgery*, vol. ix, No. 36, 1922.

ETIOLOGY AND TREATMENT OF DIABETES.

SIR,—In reply to the points raised by Dr. Barnes and Dr. Cammidge in your issue of May 6th, 1922, relating to our article on the etiology of diabetes, it will be necessary to deal with these points seriatim.

Dr. Barnes's charge relating to any suggested divorce between clinical medicine and laboratory work is erroneous, since all the patients were under careful clinical observation by responsible physicians, at least three of the patients mentioned being under the sole supervision of one of us (A. R.).

Such a charge is entirely unwarranted and Dr. Barnes ought to have realized that although the details omitted were necessary for clinical observation the complete narration of all clinical details was quite unnecessary from the standpoint of the paper, and that such complete exposition of these details would have obscured the presentation of the more scientific details and would have produced an unwieldy and unreadable article. We can state categorically that the finding of the organism was not due to the patient being on any particularly selected diet at the time of the examination, since in several patients the organism was found in the stools at the first examination before dieting had been commenced, in some instances whilst attending as out-patients.

With Dr. Barnes's comments regarding a primary ketosis we are in entire agreement, but we would emphasize the defective storage of glucose as being responsible for the glycosuria rather than the secondary failure of the glucose-burning mechanism. In addition to the acetone effects, however, the action of butyl alcohol must be considered, and in our opinion even more important than either of these is the further fate of the extraordinary diastatic ferment produced by this organism. We could dwell at considerable length upon this, but as our article confined itself to facts, so now do we prefer to postpone the theoretical considerations as to the further rôle of this exogenous ferment pending the completion of further work now in hand. We believe, however, that the due consideration of the action of this ferment extended to the tissues would explain the greater part of those clinical details which Dr. Barnes has charged us with neglecting. Meanwhile we commend to Dr. Barnes's consideration the necessity for a quiet and careful survey of the potentialities of such a ferment. When he has ruminated upon this—as, indeed, we have for an extended period—he will then be in a better position to discuss those clinical details from a standpoint which will make him much better understand facts at present perplexing to him.

Dr. Barnes quotes a diet containing oatmeal, cabbage, and lean meat. This diet is much too rich in protein for the free growth of *B. amyloclasticus*. We have tried to grow it on a medium composed largely of cabbage, and find that growth therein is extremely poor: the organism becomes thin, loses its Gram stain, and becomes practically unrecognizable. A striking parallel to this poor fermentation in protein-rich media is found in the acetone organism fully described by Gill and in other references quoted in our paper.

Dr. Cammidge refers to Koch's postulates. It is quite true we have not as yet attempted to fulfil Koch's postulates; nor have they been satisfactorily fulfilled in every other disease in which the etiological agent is known. To endeavour to complete the animal experiments will be costly and laborious, and this has been left over temporarily pending a suitable research grant being obtained to cover these expenses, since so far the work has been carried out at our own expense. Although these postulates had not been completely established it was obvious that the fermentative activity of this organism produced substances *in vitro* presenting such a striking similarity to the abnormal products present in diabetes as to warrant attention being drawn to it.

We do not agree with Dr. Cammidge's suggestion that this organism is present in the intestines as an effect rather than as a cause of diabetes. An effect of what, may we ask Dr. Cammidge? Can Dr. Cammidge, for instance, state how the reaction of the intestinal contents differs in the diabetic and the normal? Apart from complicating pancreatic disease, in what way do the intestinal contents differ?

In regard to Dr. Cammidge's remarks about "heavy inoculations of the stools," similar inoculations of a pure culture also are necessary to secure a good fermentation, and, as we have indicated, it is probably of great importance to the patient that complete vigorous fermentation is probably rarely complete in the intestine. If Dr. Cammidge could see the results of the fermentation *in vitro* of pure cultures of *B. amyloclasticus* he would recognize the beneficial restraining influences which certain intestinal organisms exercise over the vigorous action of this bacillus.

We have, however, had least difficulty in isolating this organism from those cases which are most rapidly progressive, and in two of the cases which died somewhat rapidly the organism was found at the first attempt.

Regarding the final part of Dr. Cammidge's letter, so many statements concerning diabetes have been made that almost any deduction can be drawn from them. We have not discussed these in our paper, although we have carefully considered them, since we felt that the only way of cutting the Gordian knot of diabetes was by the incisive action of facts driven hard home. Such a fact the *B. amyloclasticus* will, we believe, prove to be.

Finally, we wish to state, in reply to Dr. Barnes and the Editor, that we were not responsible for the supply of details of the paper for advance publication.—We are, etc.,

ARNOLD RENSHAW, M.D.,
THOMAS H. FAIRBROTHER, M.Sc.

Manchester, May 15th.

*** We are satisfied on further inquiry that Dr. Renshaw and Mr. Fairbrother are not responsible for the advance publication of summaries of their article in the lay press.

ASTHMA AND THE MENOPAUSE.

SIR,—Dr. Coke's argument (March 18th, p. 455) that there must be a shortage of pituitrin in pregnancy because of "its common favour in the midwifery bag" proves rather the contrary, seeing that pituitrin is occasionally required to be supplied artificially in exceptional cases. Dr. Coke surely does not mean that the administration of pituitrin is necessary or even justified as a routine—normal cases must needs have a sufficient supply of this hormone naturally. Moreover, since Compte in 1899 first stated that the hypophysis cerebri hypertrophies during pregnancy this has been accepted by all authorities.

As regards Dr. Coke's experience of the extreme rarity of asthma commencing *de novo* in pregnancy, my experience has been the opposite. I had several patients, especially primiparae, whose first attack of asthma started in early pregnancy, and I have no lesser authority than Professor De Lee[1] to corroborate my experience. That the thickening of the mucous membranes of the respiratory passages (nose, larynx, and pharynx), which is of very frequent[2] occurrence in pregnancy, is the probable contributory factor in precipitating those attacks of asthma seems only reasonable.

Further, the reason that Dr. Coke has not noticed "any difference for better or worse as regards asthma during the menopause" is simply that the onset of the menopause is usually gradual and there is ample time for the adjustment of the interaction between the endocrine organs, while in pregnancy the cessation of the ovarian and uterine mucosa activities is sudden, and in this respect an artificially produced menopause is analogous to pregnancy.—I am, etc.,

S. E. KARK, M.B., Ch.B.,
L.M.R.C.P.I.

Cape Town, April 14th.

MEASLES AND FRESH AIR.

SIR,—Not the least of the noteworthy advances of medical science during the past thirty years has been the hygienic treatment of measles. The fallacy that cold air and water were the chief enemies has departed, and open windows and cleanliness have become the rule, with the result that, although the disease remains as prevalent as ever, its mortality has very greatly diminished (in Woolwich over 50 per cent.). In view of these incontrovertible facts, it is much to be deplored that a great newspaper like the *Times* should advise mothers that "open windows are a mistake," that warm and moist air is a preventive of the bronchopneumonic complication, and that it is therefore of prime importance to "keep the air of the room moist." Warm, moist air may be useful for alleviating the symptoms of bronchitis in cold and dry weather, but as a routine measure it has a most seriously depressing and injurious effect.

My attention was once called to the occurrence of several deaths from measles in a public institution. On investigation I found that some twenty cases were being treated on the lines recommended by the *Times* medical correspondent; windows were shut and all the cases had steam kettles and tents, with the most disastrous results. The warm, moist climate of the Fiji and Faroe islands did not prevent most

[1] De Lee, *Principles and Pract. of Obst.*, p. 355.
[2] Ibid., p. 110.

of the population dying of measles. How any responsible medical writer—relying on the opinion of "an old doctor of the writer's acquaintance, who in a long medical life never 'lost' a case"—can venture to scatter broadcast such reactionary and dangerous advice passes my comprehension. Is it simply because the Ministry of Health and most of the Public Health Departments of the country are recommending a quite different method of treating this widespread disease?—I am, etc.,

SIDNEY DAVIES,
Late M.O.H. Woolwich.

Buckhurst Hill, May 9th.

MANY INVENTIONS.

SIR,—I have been much amused at your futile criticism of my friend Dr. Albert Abrams in your issue of the 6th inst. You very seldom quote from the *Journal of the American Medical Association*, and one might have expected that when you did so you would have chosen a more serious subject than an ignorant tirade against an eminent medical man—against, in my opinion, the greatest genius in the medical profession. Why you should have thus acted I cannot surmise, unless it be to justify yourself in refusing an original and very valuable article by Dr. Abrams. The American critic confessedly knows nothing of Abrams's work, though he acknowledges that he has written voluminously. What has Abrams's birth in San Francisco and his degree from Heidelberg to do with his discoveries? Can no good thing come out of Nazareth?

Dr. Abrams has frequently exposed the methods of the American osteopaths and chiropractors with whom this writer links him, but Abrams has been honest enough to acknowledge the good work which they have done, just as many eminent London surgeons have been honest enough to speak in high terms of Mr. Barker, notwithstanding the fact that a man was struck off the *Medical Register* for administering anaesthetics for him.

Dr. Abrams's blood examinations have long been established facts, and if this writer had been imbued with the spirit of science of which he speaks so glibly, instead of ridiculing methods which he was incapable of understanding, he would have tested Abrams by sending a sample of blood from a patient whose disease he did understand. It would only have cost him 10 dollars, a very modest fee which he could have abstracted from the patient, and I have no doubt if Dr. Abrams were satisfied that he was an honest seeker after truth he would have let him off the fee. Dr. Abrams says: "No diagnostic method is infallible," yet Dr. H. A. Hess, a distinguished surgeon, says: "Dr. Abrams has made fifty examinations of blood for me, and all correct, as far as I can judge." How many of the surgeons in this country could make a similar assertion? Dr. J. Madison Taylor, a man well known in this country as well as in America, says: "The light which Dr. Abrams's researches afford is the largest source of illumination, and I, for one, welcome it with thankfulness."

There is no secrecy about Dr. Abrams's methods. All his works are well known, and whether his theories be accepted or not, there is no honest individual who can refuse to accept his facts. There are hundreds of medical men from all parts of the world who visit his clinic, and they are not all fools or knaves as your colleague would seem to infer. I have never known a pupil of Abrams to speak of him except in the highest admiration. Your American friend tries to be very facetious over the sexuality of numbers, vowels, and consonants, and avers that "if there be any scientific foundation for the marvels that Dr. Abrams so picturesquely features, the scientific world has not yet found it out." When did the scientific world ever find out a new fact until it was discovered? Ignorant ridicule may delay the general acceptance, but it can never kill a new discovery. It always seems to me very deplorable that medical men, in place of leading the van in preventive medicine and in the treatment of disease, have frequently to be forced into new positions.

A good many of Dr. Abrams's instruments can be seen in London and have been seen by many medical men; therefore, there is no excuse for bolstering up an ignorant American fusillade. Dr. Abrams wisely refuses to part with his instruments until he knows that they will be properly used, and that the user is competent to carry out his methods. Imagine a delicate instrument in the hands of your American colleague; Dr. Abrams and his methods would be discredited at once. When at the Hotel Cecil on Wednesday night I said, *Damnant quod non intelligunt*, I was thinking of you and your American friend.

Dr. Abrams's most recent discovery is the analysis of handwriting, whereby he tells the sex, race, and disease of the writer. When I first heard of this work I did not think it possible or credible, and I told Abrams so. He replied, "Your very kind letter received, and I note what you say about handwriting. I wish you would make the reactions, which are definite and absolute." In the meantime I had made the reactions, and was soon able to corroborate his findings in every particular. At present I am merely amusing myself with these anlayses, but I can readily perceive that they may have very wide applicability, and may eventually be of great importance in forensic medicine. It is not necessary to see the writing which you are analysing, as an assistant can carry out the preliminary details. As far as I am concerned I prefer not to see the writing, as thus the personal equation is entirely eliminated. The other day a medical man, to whom I gave a demonstration, asked me when I was going to publish my results. I told him that at present it was quite sufficient for me to educate myself. When every important member of the community has a wireless telephone in his house and on his person, then medical editors and medical men will begin to perceive that there was more in Abrams's vibrations than was dreamt of in their philosophy. Abrams's discoveries have come to stay, whether you like them or not. —I am, etc.,

JAMES BARR.
Liverpool, May 11th.

⁂ We are at a loss to know which should be the more admired, Sir James Barr's epistolary style or Dr. Albert Abrams's facts. Those who wish to pursue the matter will find in the *Journal of the American Medical Association* for April 29th, 1922 (p. 1334) a long letter by Mr. Upton Sinclair in praise of Dr. Abrams, together with some additional information supplied by the Editor.

THE GENERAL PRACTITIONER AND THE HOSPITALS REPORT.

SIR,—Dr. J. C. Turnbull, in his letter of May 4th (BRITISH MEDICAL JOURNAL, May 13th, p. 780), on the Report on the Organization of Voluntary Hospitals, states: (1) That the report contains no definition of "voluntary" as applied to hospitals; (2) that the scheme of the "tariff patients" allows of contract practice by the hospitals.

On the first point, if he reads paragraphs 6 and 7 he will find a couple of related definitions of voluntary hospitals. If he does not consider these to be definitions, what is to be said to those who assert that they are too definite?

On the second point, if he reads paragraph 14 he will find that contract practice by a hospital is distinctly provided against.

14. *New Para.:* In any schemes for providing hospital benefit by voluntary hospitals, it is undesirable that the hospitals concerned should undertake any insurance risk, *i.e.*, undertake to provide hospital benefit, when required, in return for a periodic payment by an individual or a group of individuals; so that where schemes are set up to provide payment for hospital benefit for specified individuals or groups of individuals, such schemes should be organized not by the hospital, but by some independent body.

No one can prevent a person entering into an arrangement with some person or persons to underwrite the risks attendant upon a failure of health. A father of a family may and does enter into a contract with those who are willing to take such insurance risks. But we can and do object to a hospital constituting itself such an underwriter: it is not the business of the hospital. On the other hand, for a hospital to state the terms on which it will accept patients for definite purposes and to receive the payment arranged for work done is legitimate. That is what paragraph 22 (*a*) provides. His fear that a hospital management could accept patients under a contributory scheme without the agreement of the profession is surely met by paragraph 39, which provides for the representation of the profession in the management of the hospital. —I am, etc.,

N. BISHOP HARMAN.
London, W., May 15th.

THE OUTLOOK IN TROPICAL HYGIENE.

SIR,—With reference to the notice accorded my address on "The outlook in tropical hygiene" (not medicine) in the BRITISH MEDICAL JOURNAL of May 13th, may I be permitted to point out that the last paragraph of that notice unfortunately conveys an erroneous idea of what I really said. It runs as follows:

"Thanks, however, to the lessons learnt in the past eight years courses of instruction were now open to men and women to qualify as sanitary inspectors in the colonies, and a diploma in sanitary science as applied to the tropics was now available."

What I did say was that there was a great need of establishing a special course of instruction in this country for sanitary inspectors destined for the colonies. So far as I am aware, no diploma in sanitary science as applied to the tropics yet exists for sanitary inspectors. All that has been done in this direction is represented by the certificate granted by the Royal Sanitary Institute to sanitary inspectors who have qualified in the examination on tropical sanitation, which has been recently instituted.

I would also like to point out that the investigations on ankylostomiasis of pigs were carried out in Queensland, not in South Australia, and that, as I stated, work has also been done on this subject by O'Connor in the Ellice Islands.—I am, etc.,

ANDREW BALFOUR.

Wellcome Bureau of Scientific Research,
London, N.W., May 12th.

MARRIED MEDICAL WOMEN WHOSE HUSBANDS ARE ABLE TO SUPPORT THEM.

SIR,—As a married woman whose husband is able to support her I protest most strongly against your Association accepting such an advertisement as the one in to-day's JOURNAL, saying such women are ineligible at St. Pancras as assistant medical officers for maternity and child welfare. It is contrary to law (the Sex Disqualification Act), and it is against the best interests of the profession, which no sex jealousy should be allowed to interfere with. In my opinion, with conceit if you like, women with experience of their own children are infinitely better fitted for this work than single women; however much better individual men or women without that experience may be, the former can speak with authority.

We hear a deal about waste these days; surely it is a waste for women to spend so much on qualifying and then (as in my own case, when her children are of school age) stay at home and do another woman out of a job, which she is probably much better at than oneself, and which personally I loathe with a deadly hatred. Looking after one's children when young is a different matter.

But there is another point of view. Many husbands are *able* to support their wives and fail to give them anything but a housekeeping allowance, which is often meagre enough for housekeeping alone, and until wives have a recognized status as wage-earning members of the community it is cruel to prevent them *not* earning a living (they do that), but receiving pay for their work. Even in the lowest class husbands have to have their "bit of spending money." I have known of at least half a dozen cases of wives whose husbands are serving or have served terms of imprisonment rather than support them. It is not likely that medical women would be reduced to such straits, but is any woman going to admit that her husband is not getting on sufficiently well to support her in anything like comfort? Mrs. Patrick Campbell says she had to begin work to get her husband away from city life, for which he was not strong enough. The world could ill afford to lose her in a household drudge. I admit many men would have thought it better that she stayed at home and went out charing! Anything to keep us in the home, gentlemen. But this inquisition about our affairs is intolerable. Next you will be asking us if we are in love, as if so we are ineligible, as love, it is well known, distracts one from work. I hope when the woman appointed to St. Pancras with a dependent husband has got her job he will enjoy his much advertised position. Ye gods! no wonder the independent girl of to-day is so chary of marriage.—I am, etc.,

MARION E. MACKENZIE.

Leeds, May 6th.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on May 6th the following medical degrees were conferred:

M.B., B.CH.—G. S. Trower, H. W. Leatham.

UNIVERSITY OF LONDON.

AT the Royal Society of Medicine (1, Wimpole Street, W.) three advanced lectures in medicine, as already announced, will be given by professors in the Faculty of Medicine of the University of Paris. Monday, May 22nd, Professor F. Widal: Subject, Anti-anaphylaxie, Chairman, Lord Dawson of Penn. Thursday, May 25th, Professor H. Vaquez: Subject, De l'Erythrémie (Maladie de Vaquez-Osler), Chairman, Sir Wilmot Herringham. Wednesday, May 31st, Professor J. Babinski: Subject, Des Reflexes de défense, Chairman, Sir James Purves Stewart. The lectures will be delivered in French, and have been arranged under a scheme for the exchange of lectures in medicine between France and England. Admission is free without ticket.

UNIVERSITY OF ST. ANDREWS.

THE Senatus Academicus of the Univerity of St. Andrews has resolved to confer the honorary degree of LL.D. upon Sir Harold J. Stiles, Regius Professor of Clinical Surgery in the University of Edinburgh, and Dr. C. R. Marshall, Professor of Materia Medica in the University of Aberdeen.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN extraordinary Comitia of the Royal College of Physicians of London was held on May 11th at 5 p.m., the President, Sir Humphry Rolleston, occupying the chair.

The following fourteen members elected to the Fellowship at the previous Comitia were admitted and gave their faith to the College: Dr. Edwin Hyla Greves, Sir Sydney Russell-Wells, Dr. Ewen John Maclean, Dr. Arthur Herbert Hayes, Dr. Robert Alfred Bolam, Dr. William Henry Wynn, Dr. Charles Paget Lapage, Dr. Edward Fretson Skinner, Dr. Owen Lambert Vaughan Simpkinson de Wesselow, Dr. John George Porter Phillips, Dr. Harold Wordsworth Barber, Dr. Arthur Geoffrey Evans, Dr. Aldo Castellani, Dr. Henry Hallett Dale.

Dr. Raymond Crawfurd was elected Senior Censor.

A licence to practise physic was granted to Yassa Sudki Soliman, Cairo, and St. Thomas's Hospital. Diplomas in Public Health were granted jointly with the Royal College of Surgeons to the successful candidates.

Communications were received relating to the attendance of Fellows and Members of the College in connexion with the processions in the appeal for the hospitals on Empire Day, and permission was accorded.

The College seal was affixed to a Latin address to the University of Padua on the occasion of its seventh centenary.

A report was received from the Censors Board concerning the alterations of a resolution of the College and certain by-laws. After some discussion it was referred back for further consideration by the Censors Board.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council was held on May 11th, when Sir Anthony Bowlby, President, was in the chair.

Issue of Diplomas.—Diplomas of Membership were granted to 108 candidates found qualified at the recent examinations. (The names were printed in the report of the Comitia of the Royal College of Physicians published on May 6th, p. 742.) The Diploma of Public Health was granted, jointly with the Royal College of Physicians, to 20 candidates found qualified. The Diploma in Tropical Medicine was granted, jointly with the Royal College of Physicians, to 24 candidates found qualified. (The names were printed in the report of the Comitia of the Royal College of Physicians, published on May 6th, p. 742.)

International Congress of the History of Medicine.—The President reported that he had arranged to receive the members of the Third Congress on Wednesday, July 19th next, from 3 to 5.30 p.m.

The Services.

SURGEON COMMANDER B. H. MORRIS, of the Royal Australian Naval Reserve, has been awarded the Volunteer Officers' Decoration.

CAMPAIGNS IN PERSIA.

THE following are among the awards announced in connexion with minor military operations in North and North-East Persia during the period 1917–21:

O.B.E. (Military): Major (acting Lieut.-Colonel) Michael Keane, R.A.M.C.

M.B.E. (Military): Captain Jelal Moochool Shah, I.M.S., 1st Class Senior Subassistant Surgeon Mirza Muhamed Beg, Khan Bahadur, I.M.D.

To be Brevet Major: Captain (temporary Major) C. H. H. Harold, R.A.M.C.

The names of the following officers have been brought to the notice of the Secretary of State for War for distinguished services rendered in connexion with the operations: Captain (temporary Major) C. H. H. Harold, R.A.M.C., Major (acting Lieut.-Colonel) M. Keane, R.A.M.C.

DEATHS IN THE SERVICES.

COLONEL MICHAEL JOHN SEXTON, C.B., LL.D., Army Medical Staff (retired), died at Herne Bay on April 29th, aged 61. He graduated as M.D. and M.Ch. in the Royal University of Ireland in 1883, and entered the army as surgeon in August, 1885. He became full colonel in 1915, and retired in December, 1917. He served in the Burmese war in 1886 (medal with clasp); in the Chin Lushai campaign on the North-East Frontier of India in 1889-90 (clasp); in the South African war in 1901–02, in operations in the Transvaal, the Orange River Colony, and Cape Colony (Queen's medal with three clasps); and in the war of 1914–18 as an A.D.M.S. of the Mediterranean Expeditionary Force, and afterwards as D.D.M.S. of the lines of communication of the Egyptain Expeditionary Force, when he was mentioned in dispatches in the *London Gazette* of January 23rd, 1916, and July 6th, 1917, and received the C.B. on January 1st, 1916.

Obituary.

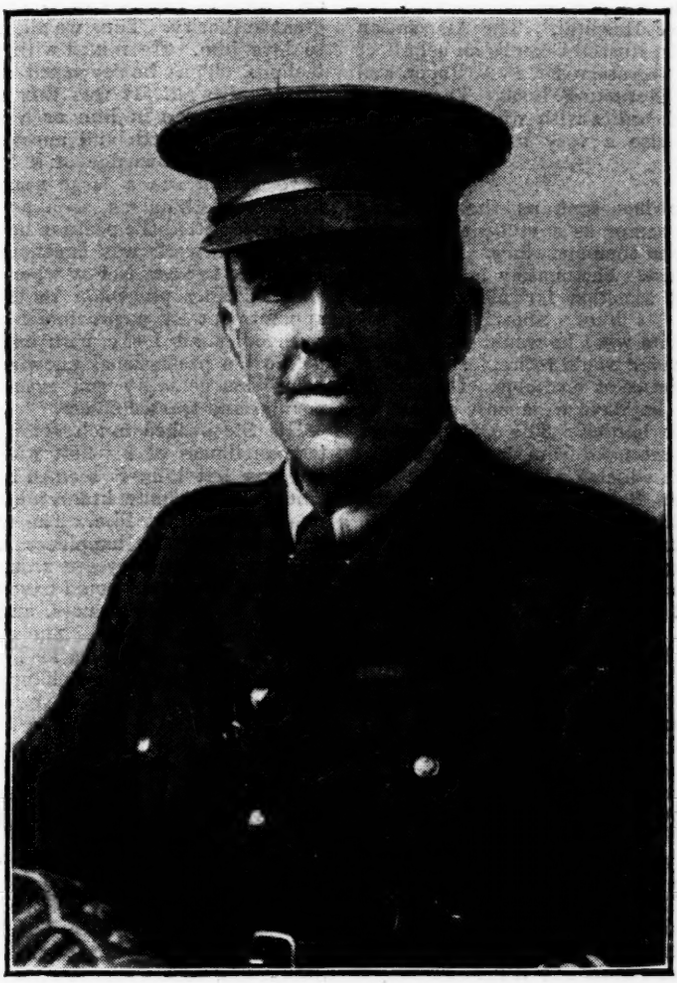
SIR HENRY DAVY, K.B.E., C.B., M.D., F.R.C.P.,

Consulting Physician to the Royal Devon and Exeter Hospital; Ex-President of the British Medical Association.

WE had to announce last week with great regret the death, on May 10th, of Sir Henry Davy, who was President of the British Medical Association when it held its annual meeting in Exeter in 1907. It occurred at his house in Exeter after a short illness, due to cerebral haemorrhage.

Henry Davy was born in 1855, and was the youngest son of Mr. Henry Davy, solicitor at Ottery St. Mary. From Honiton Grammar School he proceeded to Guy's Hospital, where he became an earnest disciple of Wilks and Moxon, whose teaching had an abiding influence on his outlook of medicine and its practice. He neglected no opportunity afforded by the great school of which he was a pupil; he took the first prize for first-year students, and while dresser to Mr. Howse he won the Gurney-Hoare prize for an essay on the value of the newly introduced antiseptic, carbolic acid, for the treatment of wounds. This essay was afterwards published in *Guy's Hospital Reports* (1878) under the title "Antiseptic surgery and pyaemia." At Guy's Hospital he held the posts of house-physician and resident obstetric assistant, and was also house-surgeon to the Evelina Hospital for Children and resident clinical assistant at St. Luke's Hospital for the Insane. He was a president of the Students' Physical Society, and frequently spoke in debates on both medical and surgical subjects. He was at one time joint editor of the *Guy's Hospital Gazette*, and, with Dr. G. Mackern, published in the *Lancet* in 1877 a paper on the blood in pernicious anaemia, based on observations of a patient under the care of Dr. Moxon. He took the diploma of M.R.C.S.Eng. in 1877 and graduated M.B.Lond., with honours in medicine, obstetric medicine, and forensic medicine, in 1878. He proceeded to the degree of M.D. in 1882, became a Member of the Royal College of Physicians in 1880 and a Fellow in 1894. On leaving Guy's Hospital he settled in practice as a physician in Exeter and was soon appointed physician to the Exeter Dispensary, of which institution he was made consulting physician in 1907 and president in 1912. In 1881, on the retirement of Dr. Samuel Budd, he was elected one of the two physicians of the Royal Devon and Exeter Hospital at Exeter, and was assiduous in the discharge of the duties of that office. The rules of the hospital would have required his retirement in 1920, on attaining the age of 65, but when the committee understood that he was willing to serve a little longer his appointment was, with the cordial approval of his colleagues on the medical staff, extended for two years. He, however, preferred to retire in 1921, when he was appointed consulting physician.

For many years he held a leading position in the profession in the West of England. He was of a very practical turn of mind, a shrewd judge of men and theories, who kept himself well informed of the progress of medicine, and took pains, by visits to the hospital at which he had been a student and in other ways, to make himself acquainted with new methods of diagnosis and treatment. It is no wonder, therefore, that his opinion was often sought in difficult cases, and that he was implicitly trusted by his medical colleagues in all parts of Devonshire; his work was much increased by the self-forgetting readiness with which he responded to any call to attend them, their wives or children, in sickness; he never failed to go to the help of any who needed him. He was staunch and loyal, and his cheery word and pleasant smile gained him many a friend, who did not forget the man when the need for the physician had passed. He was outspoken but of genial disposition, and much given to the virtue of hospitality. His election as sheriff of Exeter in 1887 afforded him special opportunities of displaying it to his numerous personal friends and to the legal and other notabilities of the county; it continued with him to the end.



Photograph by] SIR HENRY DAVY. *[Elliott and Fry, London.*

He had been President of the South-Western Branch of the British Medical Association, and when that Branch invited the Association to hold its annual meeting at Exeter in 1907 Davy was, on its nomination, elected president. In the following year, in connexion with the annual meeting at Sheffield, he received the honorary degree of D.Sc. of the University of that city, and was subsequently appointed one of the vice-presidents of the Association. During his term of office on the Council he took a great interest in its proceedings, and served as a member of the Finance Committee.

The even tenor of Davy's life was interrupted by the war. Under the scheme of territorial hospitals elaborated by Sir Alfred Keogh in 1908 Davy was appointed Lieutenant-Colonel *à la suite* of the 4th Southern Territorial General Hospital, which had its headquarters at Plymouth. Soon after the war broke out, however, he was appointed consulting physician to the Southern Command. He took his duties very seriously and did most valuable and conscientious work. He never spared himself, and for several years almost lived in trains and motor-cars; his services were in constant request in all parts of the command, which included Netley and other large and important hospitals. In spite of the fatigue involved in this constant travelling Davy thoroughly enjoyed his contact with the young and energetic members of the profession serving in the R.A.M.C.; from them he used to say he learned as much and more than he imparted. He was specially interested in the modern methods of studying the manifold forms of cerebral and nerve disturbance, with regard to which his advice was frequently asked. His early interest in antiseptic surgery gave him an added motive for careful observation and comment on modern aseptic methods. He was a member of one of the special commissions that visited the war area in France, and fully appreciated the good work there done, especially all that concerned camp sanitation. His ability and earnestness alike commanded respect, and he received the honours of C.B. in 1917 and that of K.B.E. in 1919.

Sir Henry Davy was twice married; his first wife was the grand-daughter of a well-known Exeter surgeon, Mr. P. C. Delagarde. He had two children, one a son, who was killed

early in the war, the other a daughter, who did most strenuous work with Dame Georgina Buller in organizing and equipping the Devon group of war hospitals. She survives, and has recently taken the LL.B. of the University of London, with a view of being called to the Bar. He married a second time, in 1920, the widow of his old friend Dr. John Mortimer, of Exeter, by whom he is survived.

The funeral took place on May 14th. The service was conducted by the Bishop of Crediton, and in the first part, at the Cathedral, he was assisted by the Archdeacons of Exeter and Totnes. Among the large congregation in the Cathedral were many representative people of the county of Devon and city of Exeter, including the mayor and sheriff of Exeter, the present M.P., Sir Robert Newman, and the past M.P., Sir Henry Duke, and a very large number of members of the medical profession. The British Medical Association was represented by the president of the South-Western Branch and chairman of the Exeter Division, Dr. W. Gordon, who, with Mr. E. J. Domville, consulting surgeon, represented the staff of the Devon and Exeter Hospital. The Association was further represented by Mr. Russell Coombe on behalf of the Council, by the Branch Secretary, Dr. F. A. Roper, and by the Division Secretary, Mr. Norman F. Lock. There were representatives of many public bodies with which Sir Henry Davy had been connected; also a very large number of personal friends were present.

Sir WILLIAM HALE-WHITE has sent us the following appreciation: Davy was my senior as a student at Guy's Hospital, but I saw much of him then and since. Even thus early his industry was manifest. Fortunately he combined with it a great aptitude and affection for his profession. These characteristics never left him. Shortly before his fatal illness I chanced to ask him what he would do when he retired; he replied that he never would retire, for he cared for nothing so much as the practice of medicine. His power of application was immense—holidays were only a dose of tonic to enable him to work harder. The Command in which he served in the war extended from Southampton to Land's End. The energy with which he threw himself into the duties of President of the British Medical Association when it met at Exeter will be remembered gratefully by all who were present, and this occasion brought out his keen enjoyment of being hospitable. Never was he so happy as when entertaining his friends, particularly if they were members of his own profession. He had the well-balanced mind that is appropriate to a physician; if there were insufficient data he was not ashamed to refrain from giving an opinion, but if he committed himself to a diagnosis it was pretty sure to be as good as could be made. He always surveyed the whole surroundings and circumstances of each individual patient, and therefore the advice given was sound and sensible. More than his share of troubles came his way: a severe bicycle accident led to a long illness, another time he damaged himself by a fall on a railway platform, his first wife's health was very bad for many years, he lost his only son in the war; but each trouble was borne bravely and silently without a word of complaint. He had a fellow feeling for others in distress; often has he helped them handsomely, unostentatiously, and secretly. Many were quite unaware when they met him that they were talking to a brave and generous man. As might be expected, with such a character, he was intensely loyal to his profession and his friends. For either he would, without stint, do all that lay in his power, and he will always be to patients, doctors, and friends a memory of ungrudging kindness and help.

Mr. RUSSELL COOMBE writes: When I came to Exeter as house-surgeon Henry Davy, although slightly younger than I, had been some time full physician to the hospital with some thirty beds at his disposal. It did not take me long to realize that I had met one of marked ability and possessed of an unusual familiarity with practical medicine. He indeed already held an outstanding position, and it was to him even then that his colleagues turned for advice and counsel in difficult cases. Not long after the termination of my house-surgeoncy I became one of his colleagues on the staff of the Exeter Dispensary, and discovered with astonishment the size of the out-patient clinic he conducted there. Three to four hours twice a week were given to this service.

This combination of simultaneous in-patient and out-patient experience gave him opportunities which, surely, come but to few physicians, and he made the most of them. I found in later years that when a difficult case arose he could almost invariably produce notes of a similar case—seen either whilst he was a resident at Guy's or the Evelina, or in the Exeter Hospital or at the Dispensary. It was this systematic note-taking which early gave him the collated experience that men in Exeter and for fifty miles round learned to prize so highly. He seemed often to diagnose intuitively, and yet as soon as discussion arose one found his opinion based on solid experience.

But to his medical brethren Davy was not only the skilled physician. To numbers of them he has been a refuge in times of trouble—repeated long journeys on winter evenings to see the dangerously ill wife of a medical man fifty miles away in North Devon; gifts of things wanting to the wife of another practitioner are instances of goodness of heart that could not be exceeded—yet these acts have only come accidentally to my knowledge. At his funeral I saw a practitioner from thirty miles away who owes his wife's life to an accurate diagnosis of Davy's—overriding that made by a great authority. Thus we all, his medical brethren, had got to love him. He mixed with others and entered into their feelings. Thus he developed a knowledge of life and sympathy with all. It was this sympathy that gave the laity such confidence in him as a medical adviser. Moreover, a Devonian by birth and ancestry, with a deep love of his county and knowledge of it from boyhood up, there must have been quite a large number of patients of whom he knew something as soon as he heard their names. He eminently fitted the position he filled.

His war work was excellent, and we were all proud of it. I chanced to be at Netley when the news of his appointment as consulting physician to the Command appeared. The appointment of a provincial physician was, perhaps, not received, shall I say, with enthusiasm, but it was not long before his professional knowledge was fully recognized, and before his geniality and *savoir faire* rendered him a most popular and trusted officer.

His life evoked much sympathy from us all; the sad and tedious illness of his first wife and his only son's death in the war left him, it seemed to us, a sad and sorrowful man. Thus all who knew him rejoiced in the happiness his second marriage brought him. The tragedy is that two short years have brought this happiness to an end; again our deepest feelings of sympathy are aroused for his widow. The end was, yet, what he would have wished. He often told me he wished to die in harness, and dreaded the time when he could no longer work. The sadness is that it has come so much too soon—too soon for him, since it has cut short what was obviously a period of happy and contented life; too soon for us, since it has taken from us a *confrère* who could only be lost with deep sorrow. He was a great physician, a worthy and loving son of Devon, and we are all the poorer for his loss.

ROBERT BRUCE LOW, C.B., M.D.EDIN., D.P.H.CAMB.,

Late Assistant Medical Officer, Local Government Board.

IT is with feelings of the deepest regret that we record the death, on May 12th, after a short illness, of the distinguished epidemiologist and sanitarian, Dr. R. Bruce Low. He was in his 77th year, and up to within a week of his death was engaged in literary work of much importance to the public health service.

Robert Bruce Low was born in Edinburgh in 1846 and educated at the Royal High School and University of his native city. After graduation in 1867, he became house-surgeon at the Royal Infirmary, Edinburgh, and then devoted a year to post-graduate study at St. Thomas's Hospital, London, and at the Universities of Würzburg and Berlin. He next practised as a rural general practitioner for nineteen years; the first four were spent in Lincolnshire and the remaining fifteen at Helmsley, in the North Riding of Yorkshire. During the latter period he became medical officer of health for Helmsley Rural District and district medical officer, public vaccinator, and workhouse medical officer to the Board of Guardians of the Helmsley Union, besides being deputy coroner for the North Riding of Yorkshire.

The life of a general medical practitioner in a sparsely populated area was far different in those days from what it is at present. There were then few really good roads in the district, and Bruce Low, when visiting his patients, had to undertake long journeys over the moors on horseback, and during periods of stress he spent much time in the saddle, and often went very short of sleep for several days and nights.

His horsemanship called forth the admiration of his farmer patients quite as much as his medical proficiency. Short in stature, a light weight, distinguished in appearance, always immaculately dressed, Bruce Low was one of the best examples of the practitioner of the old school. The accent he brought from over the border he never lost, and not only those who came into conflict with him but his own personal friends realized that he had only one opinion on any subject, and that was an honest one, and one from which he never wavered. He possessed indomitable pluck and perseverance and a wide sympathy with his fellow man. He had not long been in the district before he won the hearts of rich and poor alike by his skill, his steadfast devotion to duty, his kindly personality, the catholic charity which characterized all his actions, and the fact that he was always ready to turn out at any time of the day or night, whatever the weather conditions might be, to alleviate the sufferings of the poorest member of the community. When he entered a house he was greeted not merely as "the doctor" but as a friend of the family who knew and could be trusted with all the secrets jealously guarded from everyone else. So great was their faith in his wisdom and judgement that in all matters of difficulty they appealed to him for help. If, for example, a husband and wife commenced squabbling and would not be reconciled, the remedy at once suggested by friends and neighbours was, "Send for Mr. Low."

Despite the cares and responsibilities of general practice, Bruce Low found time to take a prominent part in the Volunteer movement and subsequently became Surgeon-Major to the 2nd Volunteer Battalion, Yorkshire Regiment. Gradually the importance of preventive medicine, then in its infancy, became impressed upon his mind as a result of his observation of the part played by environmental conditions on the health of the people. His interest in this aspect of medicine was stimulated by occasional conversations with his friend, William Henry Power, at that time a Medical Inspector and later the Medical Officer of the Local Government Board, who used to visit Bruce Low from time to time for the purpose of inspecting his work as Public Vaccinator. In the evening the two of them would sit and smoke and discuss problems relating to epidemiology until the early hours of the following morning.

In 1879 Bruce Low took the D.P.H. of Cambridge University, and during his tenure of office as M.O.H. of Helmsley Rural District did much to promote the public health of the area, not merely by effecting improvement in the sanitary circumstances of the district, but also by impressing upon the people the necessity of observing the laws of healthy living. These efforts to introduce sanitary reforms were at first bitterly opposed by certain local persons of influence, but his earnestness of purpose and determination prevailed, and those who had at first done everything to obstruct became in the end his staunchest supporters. His experience caused him to publish in 1886 an article on the tenure of office and appointment of medical officers of health, in which he showed the necessity to secure for these officers better terms of appointment and protection against arbitrary treatment by sanitary authorities. In after-life it was the memory of his early struggles in the cause of hygienic efficiency that made Bruce Low the sympathetic and understanding friend of all part-time medical officers of health.

As a result of the favourable impression which the Central Health Authority had formed of Bruce Low's public work in Helmsley, and of his recognized ability as a medical practitioner of high standing, he was invited, in 1887, to become a medical inspector of the Local Government Board; he readily accepted, despite the fact that he incurred thereby substantial pecuniary loss in exchanging a remunerative practice for the paltry salary offered by a Government department. Before leaving Helmsley he was entertained to a farewell dinner, presided over by the Earl of Feversham, at which all the leading men of the district were present. At this dinner many speakers testified to the usefulness of the work he had performed, and to the esteem and affection in which he was held by all. Bruce Low commenced his new duties with characteristic enthusiasm and energy. He had the advantage of being brought into intimate association with the three great exponents of the science of hygiene in its broadest aspects—namely, Buchanan, Thorne Thorne, and Power—who as successors to John Simon, the founder, were engaged in building up the fabric of the English public health service. Under their direction he had daily opportunity of studying the many and ever-varying problems relating to epidemiology and public health administration. The personal influence of his early colleagues was reflected in all his subsequent work, and he was ever anxious to acknowledge his indebtedness to them. His published reports to the Local Government Board cover a wide range of subjects and relate to the sanitary circumstances and administration of many districts, and to outbreaks of small-pox, diphtheria, diarrhoea, enteric fever, influenza, pneumonia, cerebro-spinal fever, cholera and plague, and suspected plague, in England and Wales. Probably the best known of his reports relating to water supplies are those on the river Trent area of Lincolnshire and Nottinghamshire (1893), and the pollution by sewage of the river Dee (1896). In 1904 he wrote on the arrangements in Germany for the isolation of small-pox, and in 1905 on the state vaccine establishments of that country.

It was, however, through his writings on epidemiology that his name became known throughout the world, and that he was brought into close association with members of the medical profession in many countries. He wrote a series of reports, carried on over a succession of years, on the progress and diffusion throughout the world of plague, cholera, yellow fever, and the epidemiology in recent years of typhus fever (1915), acute anterior poliomyelitis (1916), and small-pox (1918). The study of disease distribution throughout the world led Bruce Low to acquire a comprehensive knowledge of port sanitary administration, and in reply to an inquiry he furnished the Rockefeller Institute with a short historical statement showing the steps which led up to the abandonment of quarantine in the United Kingdom. This was published later in the annual report of the medical officer of the Local Government Board, 1917–18.

Bruce Low was Examiner in Sanitary Science, State Medicine, and Public Health at the Universities of Edinburgh, Glasgow, Leeds, and Cambridge. The confidence placed in his judgement and fairness was illustrated by his being, for practical purposes, the sole examiner in Part II of the D.P.H. examination at the last-named University during several years of the war period. After he had ceased to be an examiner in 1919, he was appointed by the General Medical Council as Inspector of Examinations to visit the examinations of the twenty-two examining bodies that grant degrees and diplomas in public health and sanitary science in the United Kingdom and Ireland, with the object of ascertaining whether need of improvement existed in the course of study and standard of knowledge required of candidates, and to formulate a comprehensive scheme to secure for each of the various examinations a common standard of proficiency. This duty occupied the best part of the last two years, and his comprehensive and valuable report is now under the consideration of the General Medical Council.

Bruce Low served on the War Office Antityphoid Inoculation Committee from 1904 to 1912. He was a member of the Council of the Epidemiological Section of the Royal Society of Medicine and a Fellow of the Society of Tropical Medicine. He was promoted to be an Assistant Medical Officer of the Local Government Board in 1900, and in 1911 he was retired from the public service, having reached the age limit. His retirement was of short duration, for, owing to the death of one and the serious illness of another of his colleagues, he was recalled to duty for a short period in the same year and again in the following year, while in September, 1914, he rejoined the staff for war work, and was only finally retired in May 1921.

He was willing at all times to assist and advise members of the profession and other interested persons in matters relating to public health, and this earned for him the respect and esteem of many. To his colleagues of all grades he was a constant and true friend; it is probable that he was never happier than when assisting, instructing, and advising them in their work and when placing his wide knowledge and experience at their disposal; in their turn they valued and appreciated his kindly teaching and counsel, and all cherished towards him a deep and affectionate regard. He was proud of being a civil servant, and in his life and by his work he personified the highest ideal of the old Civil Service. His long and distinguished career in the service of his country and to public health medicine was recognized in 1919 by his appointment to be C.B.

AN OLD FRIEND writes: Of Dr. Bruce Low it might on two grounds be said, *Felix opportunitate mortis*. The time for his retirement from the Civil Service came before the war, but war exigencies led to his being asked to continue

his work at Whitehall. He complied, greatly to the public benefit, and only quite lately did it become practicable to relieve him. Also it happened that only a year or so ago the General Medical Council required as inspector of the D.P.H. examinations throughout the United Kingdom a public health expert whose authority and impartiality would be universally admitted. This man they found in Dr. Bruce Low. His courtesy and tact in reporting on the various examinations left the bodies with hardly a remark to make in reply, but when it came to the issue of his general report, and to his proposals for revision of the whole D.P.H. curriculum, it at once appeared that with all his suavity he had been wide awake throughout. The report will have a far-reaching influence on the future teaching of preventive medicine. It was his last bit of public work, and having completed it he departed, at a ripe old age, without any prolonged suffering or illness.

HENRY GEORGE FELKIN, M.D.LOND., D.P.H.

DR. H. G. FELKIN, so well known as one of the heads of Linford Sanatorium in the New Forest, died after a few days' illness on May 8th, just before reaching his 54th birthday.

Henry George Felkin was educated in Germany, where his father resided, and at the Wolverhampton Grammar School. After a year at St. Bartholomew's spent in the study of the preliminary scientific subjects he migrated to the London Hospital, where he completed his medical education and served as house-surgeon. At the M.B. (Lond. Univ.) of 1893 he gained honours in medicine; he took the M.D. in 1896 and the D.P.H. (R.C.P.S.) in 1899.

Dr. Felkin's long connexion with the treatment of tuberculosis began with his appointment as house-physician at the Brompton Hospital; afterwards he became resident medical officer, and it was in those years he laid the foundation of the profound clinical knowledge of pulmonary tuberculosis and its treatment which characterized his after-career. In 1901 he joined Dr. R. Mander Smyth in partnership at the Linford Sanatorium, and for the rest of his life his best was given to the welfare of the place and its patients. He was rewarded by the confidence, gratitude, and affection of generations of patients to a degree which few men have ever won. The secret of his success in the career he chose lay, in the opinion of the writer, who knew him well, partly in his great natural clinical ability, partly in a remarkable patience and persistence which never lost heart, and was slow to acknowledge defeat, even in unpromising cases, and largely in the fact that beneath a blunt exterior lay a most sympathetic nature which his patients all came to recognize. Dr. Felkin knew pulmonary tuberculosis "from A to Z," and his patience never wearied in studying the special symptoms of those under his care. A rare combination of qualities is needed for success in sanatorium treatment, where the physician lives in such close daily contact with his patients, and this Dr. Felkin possessed in full degree. He was able to treat, to inspire, to control, and so to cure.

Dr. Felkin's interests in life were not bounded by his professional work. He was always a lover of literature, and after he settled in the New Forest he developed a love of nature and of sport which had previously been hidden even from his friends. He was cut off in the midst of the development of plans for the extension of the scientific side of his work, and leaves a gap which it will be very hard to fill. In 1905 he married Miss Elizabeth Ann Mahon, who survives him.

WE regret to record the death on May 1st, at the age of 64, after a long and painful illness, of Dr. GEORGE DUNN WILSON, of Clapham. Dr. Wilson was born in Cork and received his medical education at Queen's College, Cork, at Edinburgh, and at the London Hospital. He had been in practice in Clapham for upwards of thirty years, and was held in high esteem by his patients and his colleagues. He was surgeon to Clapham Benevolent Dispensary, and was a Justice of the Peace for the County of London. He was a former Chairman of the Wandsworth Division of the British Medical Association, and he was also a strong supporter of the National Medical Union, of which he was vice-president. Dr. Wilson was keenly interested in politics and was chairman of the Clapham Constitutional Club, a post which he filled for many years, and vice-chairman of the Clapham Conservative Association.

DR. JOHN HOWELL KNIGHT GRIFFITHS died on April 25th of pneumonia, at the age of 52, at his residence in Fulham Road, S.W. He was a native of Kidwelly, South Wales, and was educated at Carmarthen Grammar School and the University College of Wales, Aberystwith. He proceeded for his medical studies to the University of Edinburgh, where he graduated M.B., C.M. in 1895, taking the M.D. degree in 1897. He was appointed house-surgeon to the Carmarthenshire Infirmary in 1896, and in the following year he settled down in practice in Fulham. He built up a large and successful general practice in the neighbourhood, where he remained to the day of his death. During his twenty-five years in Fulham he was remarkable for his devotion to his patients, his very genial and sympathetic manner, and his optimistic view of life. He was popular not only among his patients but also with his fellow practitioners. He leaves a widow, two sons, and two daughters. He was an old member of the British Medical Association.

THE death took place at Culross, Fife, on May 11th, of Dr. ROBERT MACLAREN WISHART, of Edinburgh, in his 40th year. Dr. Wishart was educated at Edinburgh University and School of Medicine, and qualified in 1903 with the diplomas of L.R.C.P. and L.R.C.S.Edin.; subsequently he obtained the D.P.H.Dubl. in 1912, and graduated M.B., Ch.B.Edin. in 1916. In 1914–15 he served as a civil surgeon in the Edinburgh and Border Hospital at Dunkirk, and later he joined the R.A.M.C., holding the rank of temporary captain. He was a Fellow of the Edinburgh Obstetrical Society and of the Zoological Society of Scotland, and he was physician to the Boys' Industrial Brigade Home.

Medical News.

SIR RICHARD GREGORY, F.R.A.S., the editor of *Nature*, has been elected President of the Decimal Association in succession to the late Lord Belhaven and Stenton.

A CHADWICK public lecture will be given in the Chelsea Physic Garden on Thursday, May 25th, at 5 p.m., on "Superstitions of early herbalists," by Mr. Augustus Bowles, M.A., F.L.S. The chairman will be Sir William Collins, K.C.V.O., M.D. Admission is free.

DR. DAVID J. SCOTT, O.B.E., M.C., of Gray's Inn, has been called to the Bar.

THE annual dinner of the West London Medico-Chirurgical Society will be held at Princes' Restaurant, Piccadilly, on Wednesday, June 7th, at 7 for 7.30 p.m.

THE War Office announces that the War Office Committee of Inquiry into Shell Shock held its fortieth meeting on May 10th, Lord Southborough presiding. The Committee has finished taking evidence and has had the benefit of the experience of a large number of experts, both military and medical. It is now considering its report. The report will deal in detail with the origin and nature of shell shock, and will suggest measures which may be expected to mitigate the incidence of this group of nervous and mental disorders in future wars, and also measures for the treatment of patients suffering from such disabilities.

A MEETING of the Tuberculosis Society will be held at the Margaret Street Hospital, W.1, on Monday, May 22nd, at 7.30 p.m., to discuss the therapeutics of tuberculosis as carried out in a tuberculosis dispensary.

MR. J. S. MCARDLE, F.R.C.S.I., of Dublin, was recently entertained to dinner by his professional colleagues and others, who presented to him a number of valuable gifts. Dr. M. F. Cox, who presided, in proposing the toast of the guest of the evening, said that Mr. McArdle had by his genius and his capacity for work made for himself a position unparalleled in surgery in Ireland. He had given loyal service to St. Vincent's Hospital, to his country, to his patients, and to the National University. The presentations included a portrait of Mr. McArdle by Dr. Boyd Barrett, himself a former student of St. Vincent's Hospital; a motor car to Mrs. McArdle; a surgical prize in perpetuity of £20 to the best surgical student of each year in St. Vincent's Hospital, to be known as the "Surgeon McArdle Prize"; and a gold medal in surgery, to be known as the "Surgeon McArdle Gold Medal" in University College, Dublin.

PLAGUE appears to be prevalent in Java to a serious extent. We have seen no record of the number of cases, but there were 1,595 deaths from the disease in February, and 1,546 in March.

THE Lord Mayor of London will preside at the Annual Meeting of the People's League of Health at the Mansion House on Thursday, May 25th, at 3.30 p.m. The speakers will include Sir Bruce Bruce-Porter, Dr. Farquhar Buzzard, Miss Olga Nethersole, and Dr. Saleeby.

THE summer meeting of the Medical Golf Society will be held on Thursday, June 8th, at Stoke Poges Golf Club. Any gentleman on the *Medical Register* wishing to play can become a member of the society, without election, by forwarding the annual subscription of 10s. to the honorary secretary; there will be no further entrance fee for the meeting. The *Lancet* Challenge Cup will be presented for the best scratch return *v.* Bogey; and the "Henry Morris" Challenge Cup and the Society's gold medal will be presented for the best return under handicap, in either class. Class I includes members with handicaps of nine and under, and Class II those with over nine, the handicap being eighteen. Intending competitors may obtain particulars from Dr. Rolf Creasy, junr., 36, Weymouth Street, W.1.

THE Chelsea Hospital for Women has received from its chairman, Sir Frederick Eley, Bt., a donation of £1,000.

A COMPLIMENTARY dinner was given and valuable presentations made on May 1st to Dr. J. A. Ward on his retirement and departure from Grays, Essex. Dr. Ward had been in practice at Grays for twenty-seven years, and was medical officer of health for over twenty-two years. Reference was made by several speakers to his high reputation in the district and to his popularity among his medical colleagues and patients.

THE annual meeting of the Canadian Medical Association will be held at Winnipeg from June 20th to 23rd inclusive. Dr. L. F. Barker of Baltimore is to give the address in medicine, and Dr. J. M. T. Finney, also of Baltimore, has been asked to give the address in surgery. The scientific work of the meeting will be carried on in a surgical section, a medical section, an eye, ear, nose, and throat section, and a general section; and, instead of a formal pathological section, a series of pathological demonstrations will be given. The Canadian Society of Anaesthetists and the Canadian Radiological Society will also hold their annual meetings in Winnipeg at the same time.

IN Berlin there were, in 1920, 164 antivenereal disease dispensaries; 86,456 persons applied for treatment and 184,511 consultations were given, an increase of 80 per cent. on the previous year.

PROFESSOR MAYER, who has recently held the chair of physiology in the Strasbourg Faculty of Medicine, has been appointed successor to the late François Franck at the Collège de France.

THE Royal Society gave the first of its two annual conversaziones on the evening of May 17th at Burlington House. The President, Sir Charles Sherrington, G.B.E., M.D., received the guests, who were then free to study the exhibits displayed in the library and other rooms of the society. On the physical side these included models of crystal structure as determined by *x*-ray analysis, shown by Sir William Bragg and Professor W. L. Bragg; an instrument for measuring the percentage of carbon dioxide in alveolar air, made by the Cambridge and Paul Instrument Company, Ltd., at the suggestion of Professor A. V. Hill; and specimens of smoke, fog, and volcanic dust particles from the air, together with the instrument for making the records, shown by the Advisory Committee on Atmospheric Pollution. Among the biological exhibits was a collection of models and drawings to demonstrate the brain and braincase and the poise of the head in primitive members of the human family, shown by Professors Elliot Smith and John I. Hunter. One series of these models showed the occipital regions of eight endocranial casts (from that of a gorilla to that of Dean Swift), illustrating the progressive expansion of the brain; another series showed the straightening of the axis of the brain in the course of evolution; a reconstruction of the Piltdown skull indicated its original owner as a very lowly member of the human family. Dr. L. Hogben and Mr. F. R. Winton showed slides illustrating the specific effect of injecting pituitary extract (posterior lobe) upon frog melanophores; under its action the pigment cells expand; the method should be of value in the standardization of pituitary extract. Interesting and suggestive methods of measuring the bactericidal potency of the blood fluids and leucocytes were exhibited by Sir Almroth Wright; and Dr. Alexander Fleming demonstrated the lysozymic action of tissues and secretions, perhaps the most remarkable being that of tears in large dilution. Major F. W. Cragg, I.M.S., showed preparations illustrating the course of the spermatozoon in the female bed-bug. An unusual exhibit was the original portrait of Galileo by Justus Sustermans, which has special interest in this the 700th anniversary year of the University of Padua, at which Galileo was Professor of Mathematics for sixteen years.

A GENERAL meeting of the National Health Society, which is now in its fiftieth year, was held at the house of the Royal Society of Medicine on May 10th, when H.R.H. Princess Christian, the President, presented certificates to successful candidates in the examination for health workers which the society has instituted. The Duke of Devonshire, President of the society's council, took the chair, and in the absence of Sir James Crichton-Browne an address was delivered to the candidates and students by Professor H. R. Kenwood, who explained the value of the health visitor and the character of her work in this country and abroad. Dr. Shadick Higgins, M.O.H. St. Pancras, emphasized the importance of women's work in public health, and attributed the great reduction in infant mortality observed in recent years largely to the activities of the health visitor. Sir Adrian Pollock, Chamberlain of the City of London, spoke of the Nurses' Loan Fund organized by the society, and expressed the society's thanks for grants made from the Central Committee on Women's Training and Employment and from the Red Cross and the Royal Medical Benevolent Fund in some special cases; also for the assistance given by various benevolent institutions to educated women anxious to qualify as health visitors under the Board of Education and the Ministry of Health. He mentioned the hostels organized and started by Her Royal Highness for the benefit of working women in London, which had been very helpful to the lady students whilst training. Votes of thanks to the Princess, the Duke of Devonshire, and the Royal Society of Medicine were passed at the instance of Dr. Charles Porter, M.O.H. Marylebone, Bishop Ridgeway, and Sir E. Ray Lankester respectively.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

TREATMENT OF CRAMP.

DR. E. HUGHES (Liverpool) writes: In reply to "M.D.Edin.," very small doses of sulphate or acetate of copper will probably be efficacious, gr. 1/50 to 1/25 ter die.

DR. DOUGLAS L. THOMSON (Newbury) writes: If "M.D.Edin." will try 10 grains antipyrin at night I think he will find that it will cure the cramp in the legs. I had a patient who suffered similarly, but after the first dose of antipyrin there was no recurrence of cramp.

"A RETIRED M.D.CANTAB." writes: I have been for many years a sufferer from cramp, chiefly in the night, and sometimes so intense as to cause syncope. It is associated with a tendency to mild arthritic and neuritic troubles, and with intestinal sepsis; yet in spite of these I retain the sense of health of body and mind. The cause of the cramp seems to be a toxin generated in the intestine—possibly lactic acid, for the cramp is enormously intensified by the ingestion of cheese made with the lactic acid bacillus; it is also intensified to a less degree by milk and by excess of starch or *an insufficient ratio of protein to starch.* Phenacetin acts as a prophylactic, and sodium carbonate in large doses (3j or 3ij) gives temporary relief. But these drugs cannot be taken regularly without injury to health; so the best treatment is to restrict the amount of starch and of milk as far as possible, to take plenty of animal food, and of uncooked fruit and green food for the sake of salts and accessory foodstuffs. Sugar in moderation seemed less injurious than starch, probably because it is more quickly absorbed, and therefore not so liable

to fermentation. If the colon cannot be kept clean otherwise, enemata may be used; but aperients favour fermentation by keeping the intestinal contents too watery.

BOTTLES ON MOTOR CYCLES.

DR. MICHAEL W. KELLY (Killanne, Enniscorthy, co. Wexford) writes: I should be much obliged to any motor-cycling members for hints as to carrying bottles and other breakable articles in a midwifery bag on a motor cycle.

TINNITUS AURIUM.

"T." asks for advice in the treatment of a patient who for three years has suffered from persistent tinnitus in the left ear; six months ago it commenced in the right ear. He has been in the tropics for the past twenty years and takes quinine regularly; when quinine was stopped for six months at home the condition did not improve. His hearing is good. All the usual remedies have been tried without avail.

STAINS FOR BLOOD FILMS.

DR. J. SHULMAN (House-Physician, Coventry and Warwickshire Hospital, Coventry) writes: Of late I have been making a number of blood examinations, and the Jenner and Leishman stains which I have had at hand have given very disappointing results, especially with the white cells. I have found that staining with haemalum and eosin in the ordinary way gives excellent results, and as I have not seen it mentioned in any text-book I have referred to, I should like to hear of any objections to this method of staining blood films.

INCOME TAX.

"ARDUUS" has for twenty years paid income tax on the basis of his receipts for the previous calendar year. He has received an additional demand for 1918 which, as he is informed, arises through an increase of £500 in his income from investments.

*** We do not see why an increase in investment income should be taken to require an increase in the assessment on earnings, which rests on entirely different facts. In 1918 an increase of £500 in taxed income would involve payment of tax on earnings at a higher *rate*. As the law stands, professional profits are assessable on the three years' average, and income taxed at the source forms part of the total income of the recipient, according to the basis of the current year. The society to which "Arduus" refers in the course of his letter is probably the Income Tax Payers Protection Association, 69, Fleet Street, E.C.4.

"D. J. D." qualified in January, 1920, and became an assistant in April, 1920; he asks as to the basis for computing his income tax returns.

*** The three years' average cannot be applied to include years when a person is not carrying on the business or vocation. For the year to April, 1921, he is chargeable on the amount of his earnings for that year; for 1921–22 on the same amount; for 1922–23 on the average of the earnings of the first two years, and thenceforward on the average of three years' earnings—that is, assuming that "D. J. D." remains an assistant. The expense of hospital and examination fees necessary to take higher qualifications cannot be deducted for tax purposes.

"A.M.B." relinquished an appointment as assistant M.O.H. to take an appointment as M.O.H. in another locality. He asks if he can claim an allowance for removal and temporary accommodation expenses.

*** No; such expenses cannot be regarded as incurred wholly, exclusively, and necessarily *in* the performance of his new duties.

"E.Y." purchased a car in 1914 for £145 and sold it in 1918 for £80. In 1922 he purchased a car for £400. He asks what he can claim.

*** The amount allowable to "E.Y." is the 1922 cost of a car of similar power, condition, etc., to the one purchased in 1914, less the £80 obtained by the sale of his old car; the amount expended over and above that excess represents capital outlay on improvements.

"T. A. B." has retired from colonial practice and resides in this country about four months a year. His income is derived entirely from Colonial Government securities.

*** He is liable to income tax on income derived from this country from literary or other work, and in our opinion service on a ship working from an English port would not count as residence in this country provided that no residence was retained here to which he could return, in which case such income would count as foreign income.

"H." asks: Should remuneration under the Insurance Act be declared as part of the income from private practice?

*** It is clear that in the great majority of cases it is much more convenient to include all the professional earnings in one general amount. The authorities concur in the practice, which, in our opinion, has sufficient legal justification.

"G. H. J." inquires as to the allowance to be made for the replacement of a Hupmobile car *plus* Douglas motor cycle by a Riley car *plus* an Overland car.

*** It is assumed that the Hupmobile and Douglas were purchased new and not in second-hand condition. The allowance due is the cost of a Hupmobile car *plus* Douglas motor cycle at the date the replacement was effected, less £185, which our correspondent states was the sum obtained for the old car and cycle.

LETTERS, NOTES, ETC.

MOROCCO BOUND.

DR. LEONARD WILLIAMS writes: May I crave a space in your columns for an announcement which reaches me from my friend Dr. Gardette, editor of *La Presse Thermale et Climatique*, concerning two voyages for medical men which he is organizing to the Moroccan coasts for the late autumn? The first starts from Bordeaux on September 20th, and returns to Marseilles on October 22nd. The second starts from Marseilles on October 19th, and returns to Bordeaux on November 23rd. The accommodation both in transport and sojourn will be what is known as first class, and there will be no tips. The price for a medical man is 4,750 francs (about £95), and for an accompanying wife or daughter 4,950 francs (about £100). Any further details may be obtained from Dr. Gardette, 3, Rue Humboldt, Paris—not from me, please.

THE TREATMENT OF PNEUMONIA.

MR. VALLABHDAS N. MEHTA (Viramgam, Bombay Presidency) writes with reference to an article in the BRITISH MEDICAL JOURNAL of March 11th (p. 420) on the treatment of pneumonia: During the last influenza epidemic, and subsequently in numerous cases of lobar pneumonia, I have used Dr. Arthur J. Mathison's specific treatment of pneumonia, and have met with very excellent results therefrom. This combined treatment with creosote and iodide, if commenced from the very beginning, acts as a reliable specific for this dreadful disease, and proves entirely successful. In cases which are lobular, or complicated with meningitis or typhoid, its action is doubtful. This treatment is further diagnostic of some other complication if the symptoms and pneumonic process do not show any signs of abatement after three days. In such cases some other treatment appropriate to the mixed infection, side by side with the specific treatment, as long as the process continues, helps a great deal in shortening the course of the disease.

MOTOR TAXATION.

"F.R.C.S." writes: I read the paragraph on motor-car taxation in last week's JOURNAL (p. 772) with mixed, but mainly depressed, feelings. An equitable arrangement of motor-car taxation seems very difficult to achieve, but I wish to suggest that the fairest method would be one based on the value of the car. In my own case I am the owner (and incidentally the driver) of a Ford—the list price of the new model, complete, is £185, and the tax payable annually is £23. Three neighbouring practitioners have new models of Rovers and Humbers—list price £650 (incidentally they have chauffeurs); their motor taxes are about £12 annually and their incomes well into four figures. Without wishing to break any of the Ten Commandments, I feel that either I am being taxed too highly or that they are escaping too lightly. A fuel tax would be relatively hard on us all, but even then I should come off rather badly. I am afraid owners of Fords or Chevrolets will not be content to adopt the *laissez-faire* attitude suggested by Mr. Massac Buist in the concluding part of the article.

INTESTINAL DISINFECTION.

IN the note published in the JOURNAL, No. 3194, p. 462, for "tabloids" read "tablets."

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 29, 32, 33, and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30, 31, and 32.

THE appointment of certifying factory surgeon at Kilbirnie (Ayr) is vacant.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.